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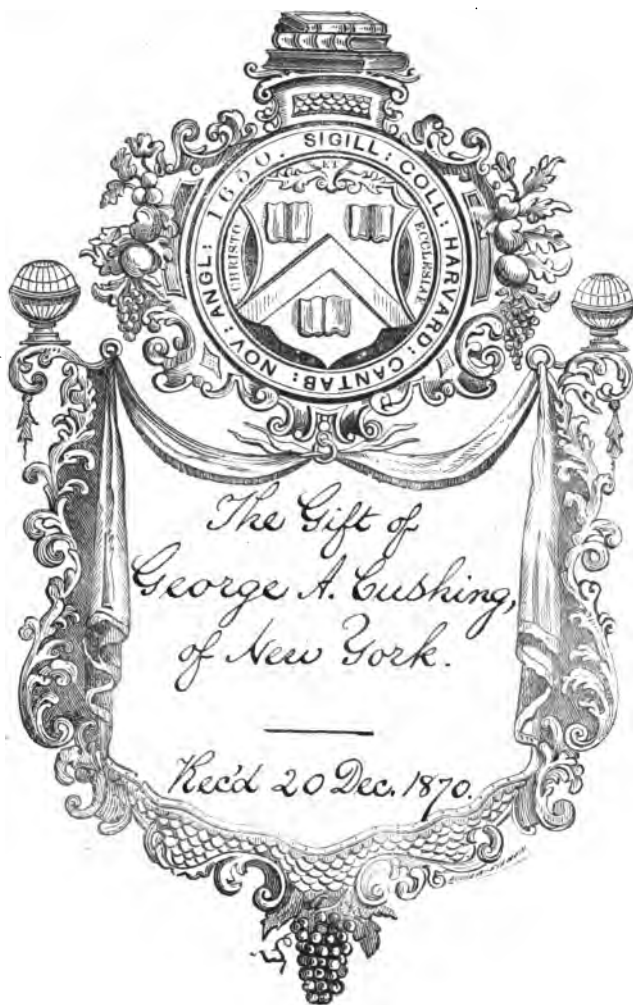
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Sixteenth
^ ANNUAL REPORT

OF THE

Croton Aqueduct Department,

MADE TO THE COMMON COUNCIL OF THE (CITY) OF
NEW YORK, OCTOBER 10, 1864.

FOR THE YEAR 1864.

BOARD OF ALDERMEN,
JANUARY 9, 1865.

DOCUMENT No. 3.

^c NEW YORK:
EDMUND JONES & CO., PRINTERS TO THE CORPORATION,
No. 26 JOHN STREET.
1865.

Eng 1070.29

1870, Dec. 20.

Gift of
Geo. Augustus Bushing,
of New York.

Croton Aqueduct Department,

ORGANIZED

UNDER A LAW OF THE LEGISLATURE

Of the State of New York,

PASSED APRIL 11, 1849.

CROTON AQUEDUCT BOARD.

PRESIDENT COMMISSIONER,
THOMAS STEPHENS,

ASSISTANT COMMISSIONER,
ROBERT L. DARRAGH,

COMMISSIONER AND CHIEF ENGINEER,
ALFRED W. CRAVEN.

Assistant Engineers.

BENJAMIN S. CHURCH,
ESTEVAN J. FUERTES.

HENRY L. ROBERTSON, CLERK TO CROTON AQUEDUCT BOARD.
ALEXANDER F. DODGE, CONTRACT CLERK.

Bureau of Water Rents.

THOMAS B. TAPPEN, WATER REGISTRAR.

Bureau of Pipes, Sewers, and Pavements.

AARON B. ROLLINS, WATER PURVEYOR.

DOCUMENT No. 3.

BOARD OF ALDERMEN.

JANUARY 9, 1865.

The following Annual Report of the Croton Aqueduct Board for the year 1864, was received, and the usual number of copies ordered to be printed in Document form.

D. T. VALENTINE,
Clerk.

CROTON AQUEDUCT DEPARTMENT,
NEW YORK, January 1, 1865.

To the Honorable the Common Council :

The Croton Aqueduct Board beg leave to submit the following Report of the operations of the Department during the year 1864, arranged under the usual heads of work and expenditure :

AQUEDUCT REPAIRS AND IMPROVEMENTS.

The annual examination and repairs of the interior of the aqueduct were made in October. The water was shut off from the Conduit at Croton Dam at 6 A. M., on October 24. The gates were opened again at 4 P. M., October 30th. The time, therefore, during which there was no delivery of water into the city by the aqueduct, was six days and ten hours. The aggregate length of the fissures, or checks, inside the aqueduct, repaired during this period, is as follows :

On the 1st Division.....	550 feet.
“ 2d “	1053 “
“ 3d “	678 “
“ 4th “	240 “
“ 5th “	50 “
“ 6th “	575 “
“ 7th “	88 “
“ 8th “	554 “
<hr/>	
Total on the whole line.....	3788 feet.

The character and cause of these checks has been so frequently adverted to in former reports, that it is not considered necessary again to explain them here.

The following table shows the quantity of work done on the exterior of the aqueduct during the year :

	Cubic yards of general stonework, repairing walls, ditches, &c.	Cubic yards of retaining wall tak- en down and re- built.	Cubic yards of earth embankment.	Length in feet of stone fence.	Length in feet of board fence.
1st Division.....		214.8	1,506.0		
2d Division.....	1,113.5				
3d Division.....		900.0			527.0
4th Division.....					340.0
5th Division.....		529.0		285.0	816.0
6th Division.....	2,621.7	1,819.0		641.0	487.0
7th Division.....				270.0	1,100.0
Totals.....	3,735.2	3,462.8	1,506.0	1,196.0	3,270.0

During the examination of the interior this season, a measurement was made of such portions of the aqueduct as will in time require reinforcement, for reasons adverted to in our report of last year. The result of the measurement shows that for an aggregate length of 6.598 miles of the aqueduct the bond of the masonry has been so far broken that it would be unsafe to increase the flow of water to its full capacity. This is a subject which, in the present rapidly increasing consumption of water, is becoming daily of more importance. It should be taken up and carefully considered at an early day.

For the expenditure under this head, see Schedule No. 8, appended.

CROTON AQUEDUCT EXTENSION.

Our work during the year, under this head, has been the completion of the structures at the "High Bridge" and the New Reservoir.

On the High Bridge there has been placed a massive iron railing, of great strength, and corresponding in design to the general appearance of the bridge. The slope of the river on the north or Westchester side has been terraced, and the grounds about the bridge, which during the work at this point have been necessarily disfigured, have been put in proper order.

NEW RESERVOIR.

The roofs to the gate-houses have been finished, and a substantial terrace of stone has been constructed in front of each gate-house during this year. The coping of the New Reservoir has been surmounted by an iron railing, intended in design to be sufficiently strong to prevent any accident to visitors, and at the same time so light as to obstruct the view as little as possible.

CARMANSVILLE.

The work authorized during the last session of the Legislature, intended to introduce a supply of Croton water to the upper part of the city, has not been commenced. The act required certain legal proceedings preliminary to the commencement of operations by our Board, and on the 26th of May last application was made to the Counsel of the Corporation to take the steps necessary to enable us to proceed with the work.

Late in October a notice of application for the appointment of Commissioners of Appraisal, to take and acquire the lands necessary for this purpose, was duly published, and the motion for such appointment is in accordance with said notice, is to be made before the Judge of the Supreme Court on the 23d of January, 1865. Even should there be no further delay, the law proceedings necessary under the act will require sixty days for their fulfillment after the report of the Commissioners has been filed, and as their examination and the making up their report may possibly not be finished in less than ten or twelve days, there is but little probability that we shall be permitted to commence the work before the middle of April.

In view of the inconvenience now experienced by many of the householders in that part of the city, and the actual suffering daily felt in public institutions where large numbers are collected together, this delay is to be regretted, but it cannot be attributed to any neglect of our Board.

STORAGE RESERVOIRS.

No authority has yet been given our Board to commence operations under this head. The importance of early attention to this work has been explained in our previous reports, but we beg leave, respectfully, again to ask you to take steps for its early prosecution. In the months of June, July and August, a long continued drought demonstrated clearly the danger of delay in making this necessary provision to meet the deficiency in our supply which annually occurs during the period when the Croton River yields only its minimum flow.

From the 27th of June to the 18th of August, a period of 52 days, no water passed over the weir at Croton Dam. On the 3d of August the supply had been so much reduced that the surface water behind the dam was four feet six inches below the lip of the weir. This fact is put before you without comment, being, in itself, sufficient to awaken your attention to the importance of early action. A drought of longer continuance, combined with an increased daily consumption of water in the city, may yet find us unprepared with the proper remedy, notwithstanding the peculiar facilities existing for its provision. .

METEOROLOGICAL OBSERVATIONS.

Observations during the year have been made, and records kept, of the fall of rain and snow, the atmospheric evaporation of water, atmospheric temperature, and the temperature of water in the aqueduct. The following table shows the result obtained :

TABLE, showing the precipitation of Rain and Melted Snow, and Snow; the range of the Thermometer, and the Evaporation, during the year 1864.

MONTHS.	RAIN & SNOW.		THERMOMETER IN THE OPEN AIR.				EVAPORATION.			THERMOMETER IN THE WATER IN THE AQUEDUCT.			
	Amount of Rain and Melted Snow in Vertical Inches.	Amount of Snow in Vertical Inches.	Highest range, Fahrenheit.	Lowest range, Fahrenheit.	Monthly average.	Yearly average.	From wooden box, sunk in earth of bank.	From wooden box in bateau.	From tin box in bateau.	Highest range, Fahrenheit.	Lowest range, Fahrenheit.	Monthly average.	Yearly average.
January.....	1.73	6.50	55	-5	27.27	.....	.....	.....	.....	85	82	83.53	.....
February.....	1.02	1.81	57	-1	30.97	.....	.....	.....	.....	87	82	85.87	.....
March.....	2.29	4.89	59	14	35.56	.....	.....	.....	.....	41	82	86.89	.....
April.....	8.25	.....	77	30	45.85	.....	.....	.....	.....	54	41	46.19	.....
May.....	4.08	.....	90	40	62.75	.....	.....	.....	.....	67	51	60.79	.....
June.....	3.22	.....	99	44	69.25	.....	.....	.....	.....	75	63	68.55	.....
July.....	8.30	.....	97	52	75.22	.....	.....	.....	.....	79	71	74.90	.....
August.....	5.40	.....	98	55	75.01	.....	.....	.....	.....	80	72	75.51	.....
September.....	4.90	.....	82	44	61.94	.....	.....	.....	.....	72	62	65.19	.....
October.....	2.53	.....	74	30	50.39	.....	.....	.....	.....	63	50	56.24	.....
November.....	4.16	0.25	69	19	41.60	.....	.....	.....	.....	51	37	43.86	.....
December.....	2.96	21.43	57	6	32.55	.....	.....	.....	.....	48	32	36.49	.....
	38.72	84.38	51.69	87.12	37.53	89.97							52.79

The observations on evaporation were taken from three boxes, placed as follows :

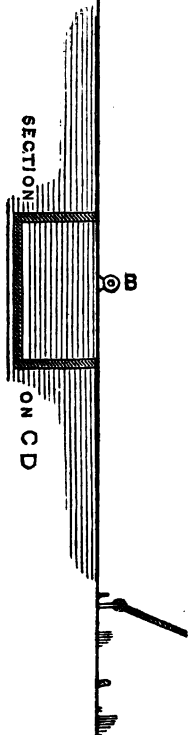
First. A square wooden box, 4x4x3 feet, sunk in the earth of the dividing bank of the Old Reservoir, the top being open and on a level with the ground.

Second. A square box of wood, 3' 8" x 3' 5" x 3' placed in a bateau, which floats on the surface of the Reservoir, and so arranged that the water completely surrounds the outside of the box, to within four inches of the top, the level of the water in the box corresponding with that in the Reservoir.

Third. A circular tin box, ten inches in diameter, and twenty inches deep, placed in the same bateau, and arranged in the same manner, as regards the surrounding water.

By the position of these two last boxes, the water in them is kept as nearly as possible at the same temperature as that of the water in the Reservoir. The bateau is made of large dimensions, to prevent as far as possible much movement by the waves. In its plan, it is arranged so as to prevent the exactness of our observations from being affected by spray, and at the same time to have the surface water in the boxes fully exposed both to wind and the action of the sun. The boxes are painted on the inside and outside, to provide against any slight inaccuracy which might arise from the action of the sun. The observations have been made at the old Receiving Reservoir, by the Superintendent of that division of the aqueduct.

The lowest range of the thermometer (5° below zero),

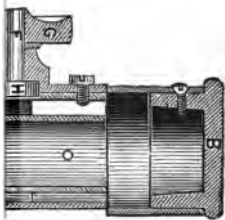
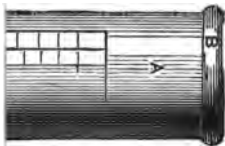


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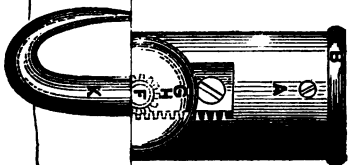
ON C D

B

Scale



Top of Evaporating Box



was registered at the Third Division, and the highest range (99° above zero), at the Second and Eighth Divisions of Receiving Reservoir.

RECEIPTS.

The receipts of the Department are classed under the following heads of accounts, viz. :

Water rents and penalties thereon ;
Permits for taps in water pipes ;
Permits for sewer connections ; and
Permits for vault constructions.

WATER RENTS AND PENALTIES.

The receipts under this head show a very satisfactory increase over those of 1863. They were from :

Water Rents.....	\$895,612 72
Penalties thereon.....	11,621 55
	<hr/>
Total.....	\$907,234 27
	<hr/> <hr/>

The receipts from same sources in 1863, were \$380,958.90. The increase in 1864 is therefore \$26,275.37.

Schedules are appended showing the weekly receipts from January 1st to December 31st, 1864, and the annual receipts in each year, from and including the year 1849 to date.

To determine the actual revenue which the city derives from the supply of Croton water, we must add to the annual collections in the Bureau of the Water Registrar, the amount of arrearages or unpaid water rents, which on the close of each water year are certified to the Clerk of Arrears.*

The following table exhibits the annual collections and arrearages for each year since the year 1853 :

*Annual Collections and Arrearages under the head of
Water Rents and Penalties.*

	COLLECTIONS BY WATER REGISTRAR.	AMOUNT OF ARREARAGES RE- TURNED TO CLERK OF ARREARS.	TOTAL REVENUE.
1854.....	\$608,966 15	\$35,032 45	\$643,998 60
1855.....	674,736 42	46,906 29	721,642 71
1856.....	682,949 57	57,870 64	720,820 21
1857.....	697,370 51	57,871 60	755,042 11
1858.....	730,107 98	62,892 92	793,000 90
1859.....	759,250 45	55,410 05	814,660 50
1860.....	767,169 82	48,005 51	815,175 13
1861.....	765,954 35	50,836 98	816,791 33
1862.....	783,234 60	62,738 22	845,972 83
1863.....	880,968 90	55,331 11	936,290 01
1864.....	907,234 27	50,556 18	957,770 45

In addition to this large and annually increasing revenue, and independent of the facilities for the prompt extinguishment of fires, the city derives great incidental advantages in the full supply of water to the various charitable and corrective institutions on Blackwell's and Randall's islands, and to the very numerous buildings throughout the city which are used for public purposes.

* The water year commences May 1st. The collections of each year therefore include the collections of the last four months of one water year, and of the first eight months of another water year. As the penalties of five and of ten per cent. for non-payment are added to the rents on the first days of August and of November, respectively, the principal collections for the current year are made prior to those dates.

The value of this supply, if estimated upon the rates charged to private consumers, is upwards of \$50,000.

PERMITS FOR TAPS IN WATER PIPES.

The receipts for the year under this head,
 were.....\$2,779 00
 =====

PERMITS FOR CONNECTIONS IWTH SEWERS.

The receipts from this source were.....\$15,375 00
 =====

PERMITS FOR THE CONSTRUCTION OF VAULTS.

The receipts from this source for the year,
 were.....\$19,686 79
 =====

In June last, the ordinance relative to vaults, cisterns, and areas, was amended, by requiring that payment should be made to the city only, for the excavations below the surface of the street which are left covered. The effect of this amendment is to exempt from the usual charge those excavations which, commonly known as open areas, had previously been subject to payment as vaults. This change in the ordinance has, therefore, to some extent, diminished the collections that otherwise would have been made under this head for the year; they are, however, still in excess of those of 1863.

We present, in tabular form, the receipts for the year,

from the several sources herebefore mentioned, in contrast with the receipts from the same sources in the year 1863. The aggregate result shows a very satisfactory increase in the revenues of 1864.

TABLE OF RECEIPTS IN YEARS 1863-4.

HEADS OF ACCOUNT.	RECEIPTS IN 1864.	RECEIPTS IN 1863.	INCREASE IN 1864.	DECREASE IN 1864.
Water rents and penalties.....	\$907,234 27	\$880,958 00	\$26,275 37	.....
Permits for taps in water-pipes.....	2,779 00	2,572 00	207 00	.....
Permits for sewer connections.....	15,375 00	16,169 00	.....	\$794 00
Permits for vault constructions.....	19,686 79	18,165 64	1,521 15	.....
TOTALS.....	\$945,075 06	\$917,855 54	\$28,013 52	\$794 00

The net increase in the receipts for the year 1864, under these heads, is, therefore, \$27,219 52. There was also received under the head of "Petty cash," the sum of \$770.73, for work done and materials sold. Details of the weekly collections under these several heads, and of the deposits with the City Chamberlain, will be found in Schedules Nos. 1-7, hereto appended.

EXPENDITURES.

The expenditures of the Department are under the following heads of account, viz. :

Aqueduct, repairs and improvements ;
 Croton Water Works, extension ;
 Contingencies ;
 Salaries ;
 Sewers—repairing and cleaning ;
 Sewerage system surveys ;

Streets—repaving and repairs ;
 Water pipes and laying ;
 Wells and pumps—repairing ;
 Belgian pavement expenses ;
 Street Improvement Fund ; and
 Russ Pavement Improvement ;

The work and expenditure of the past year, under the head of “Aqueduct—Repairs and Improvements,” and of “Croton Water Works and Extension,” have been described in the previous pages of this report.

CONTINGENCIES.

Under this head the available appropriation	
was	\$5,653 72
Of which was expended	4,909 98
	<hr/>
Leaving balance of	\$743 74
	<hr/> <hr/>

(For the details, see Schedule No. 9.)

SALARIES.

Available appropriation	\$79,629 34
Expended	78,830 03
	<hr/>
Balance	\$799 31
	<hr/> <hr/>

(See Schedule No. 11.)

SEWERS—REPAIRING AND CLEANING.

The amount available under this head for the operations of the year, was.....	\$45,888 08
Expended.....	43,809 29
Leaving balance of.....	<u>\$2,078 79</u>

(For details of the expenditures which are connected with the repairs and cleansing of the sewers, receiving-basins and culverts throughout the city, see Schedule No. 12.)

SEWER CONSTRUCTIONS—[NEW WORK.]

In pursuance of Ordinances of the Common Council, contracts for the construction of 22,166 lineal feet of sewers were made during the year, in addition to which 1376 lineal feet were completed during the same period at private expense; the total being 23,542 lineal feet, or nearly four and a half miles.

Sixty-four new receiving-basins and culverts have been added to the number previously built, making the total number of 2,840 receiving-basins or receptacles for surface drainage in use in various parts of the city.

The aggregate length of the sewers now built is upwards of 180 miles.

(For the localities of the new sewers, see Schedule No. 29.)

(A list of sewers ordered, but for which contracts have not been made, will be found in Schedule No. 31.)

SEWERAGE SYSTEM SURVEYS.

Under the law of 1849, which created the Croton Aqueduct Department, and defined its powers and duties, the Croton Aqueduct Board are charged "with the construction, repairs, and cleansing of all the sewers and underground drains, *but subject to the orders and directions of the Common Council as to the times and places of building new sewers, and to the general plan which has or may be adopted for the sewerage and drainage of said city.*"

No general plan had at that time been adopted. Its necessity was, however, early seen by this Board, and to guard against the evils even then apparent, and which, doubtless, would be still further increased by its neglect, the attention of the Common Council was at once urgently called thereto, and authority to incur the expenditure necessary in the preliminary work was, at the same early period, asked for by this Board, both in their annual reports and in special communications.

The efforts of this Board, frequently repeated during a period of fourteen years, at length met with partial success. In the month of July, 1863, a resolution of the Common Council authorized the undertaking and completion of such surveys and plans as might become necessary in the establishment of a system of sewerage. The inability of the Common Council to provide at that time the necessary means for its prosecution, caused some further but unavoidable delay in the commencement of the proposed work. An expenditure of \$10,000 was subsequently sanctioned by the Legislature of 1864, and an appropriation of that amount was soon after made by your immedi-

ate predecessors. Since then this most important work has been carefully and steadily prosecuted, and much progress has been made therein.

SEWERAGE DISTRICT, NO. 1.

This district lies between the westerly boundary of the Central Park and Hudson River, and extends from Fifty-ninth to Eighty-first street, its area being upwards of 407 acres.

The plan for the sewerage of this district was completed early last summer, and the same was submitted to the Common Council for approval with a special communication under date of August 8th, 1864.

The distinguishing features of this plan, as contrasted with the utter absence of method and disregard of economy which have characterized the construction of most of the sewers heretofore built in this city, were alluded to in that communication in the following words, viz. :

“ 1st. The construction of a main trunk or outlet sewer for the conveyance of the sewerage of the whole district to the exterior pier-head line, to be thence carried away by the tidal currents, thus lessening, if not entirely avoiding, the obvious evils caused by an indefinite number of small sewers discharging their fecal contents into the heads of slips and along the river shores to poison the air with noxious and disgusting effluvia.

“ 2d. A gradual reduction in the capacities of the branch or lateral sewers as they recede from the main trunk, yet

each made fully equal to the work it would, under all possible contingencies, have to perform.

“3d. The adoption of such lines and grades for both the main and branch sewers as will furnish the maximum of sewerage facilities, and at the same time involve the least comparative cost in their construction, and the least expenditure thereafter in the removal of sediment therefrom—the harmonious arrangement of the several parts making the system, as a whole, self-cleansing.”

It was also stated in that communication, that it was most desirable to contract for the construction of the whole of the sewerage proposed for the district at one time, as by so doing a saving could be made of at least one-half of the expense that would be incurred in the construction of a similar extent of sewerage in the old way.

This saving in expense would be due in part to the omission of all unnecessary work, and to the adaptation of the capacities of the various mains and laterals to the sewerage necessities of each locality, and also to a reduction in the incidental expenses under the heads of surveying, assessing, collecting, advertising, printing, &c., which increase so disproportionately the cost of sewers, as well as of other public improvements, when done by piecemeal.

This district embraces, as before stated, an area of about 407 acres. The cost of sewerage this area, according to the old method, or want of method, now controlling constructions, would be \$1,793,074.80.

The cost of sewerage same area, by the system proposed, would be \$679,946.99.

The difference, or saving, being \$1,113,127.81, or about 63 per cent.

That this, the first authorized attempt to secure the blessings of a "well devised and harmonious system of sewerage" for our city might be successful, it was recommended that the plan submitted be officially approved, as the plan for the sewerage of District No. 1, and that resolutions should be adopted, 1st, expressly forbidding the construction of any sewer in said district, unless, in the opinion of this Board, the same was in accordance with said plan; and, 2d, authorizing the immediate undertaking and completion of the main sewer, and such of the lateral or branch sewers as are located in the several streets and avenues, or parts thereof, in said district, which are now open by law, to such extent as, in the opinion of said Board, might be practicable.

This communication was referred to the Committee on Sewers, but, inasmuch as no further action has been taken, we would here renew those recommendations, and respectfully, but urgently, ask your favorable action thereon.

We would add, in this connection, that much satisfactory progress has been made in the preparation of plans for the sewerage of other districts. These plans when fully perfected will, in like manner, be submitted to your Honorable Body for approval and adoption.

Before concluding this part of our report, on a subject to which the attention of your predecessors has so fre-

quently been called, we feel constrained to say, that the disregard of all proper principle shown in the construction of our so-called sewers, is discreditable to all who have any control over the subject. The utter want of any system, and the daily increasing evils resulting from neglect to adopt any change in this respect, are facts beyond contradiction—facts tending to bring disgrace upon our city. In the neighboring city of Brooklyn, a “System of Sewerage” was adopted immediately after the introduction of a full supply of water.

In the more distant and younger city of Chicago, the same enlightened foresight has been manifested by its public authorities, and the same vigor and promptness shown in its practical application.

In the city of New York—the metropolis of the New World—the city which, from its wealth and position and the enterprise of its inhabitants, should be the leader in all movements tending to the advancement of science, the development of general intelligence, and to an increase in the comfort, conveniences, and health of its people—what is the progress which has been made in a work which, in a sanitary point of view, is confessedly inferior to no other public measure ever yet devised?

Probably no city in the world possesses greater natural advantages for the establishment of a perfect system of sewerage than our own city of New York. Situated as it is upon an island of moderate width and elevation, whose shores are washed twice daily by the rapid and deep tidal currents of two noble rivers or arms of the sea, every facility is at our command for the prompt and effectual removal of

the city sewage. And yet, for miles along our wharves, the elements of disease are deposited and retained. Every dock receives the contents of a sewer ; and from these multiplied receptacles of rapidly accumulating filth there go up hourly noxious exhalations, disgusting to the senses and destructive to the health of the whole neighborhood.

With the experience before us of the chief cities in the Old World, we still spend millions in constructions, crude in design and wanting in every excellence, which a moderate share of ordinary intelligence would insure to them ; and, as has been the case in those cities, we must soon reach a point when the public health will imperatively demand an entire abandonment and reconstruction of work on which we are now so recklessly wasting money.

The language of this part of our report may appear like reflection on your predecessors. It is not intended to be discourteous ; but it is no longer just to ourselves to speak of the present condition of our sewerage in any veiled language. The attention of the public has been forced to the subject by the actual experience of injuries suffered, and our Department has been called upon to bear the odium of a negligence which is not its own, and to correct which it has urgently struggled in vain for years past.

Having performed our own duty in the matter, and exhausted every effort to correct the existing evils, it seems only right that the public should, at length, be told plainly that the gross want of scientific knowledge, the recklessness of public expenditure, and the disregard of public health so conspicuous in our sewer constructions,

are not justly attributable to the Croton Aqueduct Board.

It is earnestly hoped that the present Common Council will give to this subject that intelligent consideration which its great importance deserves ; and also will, by their prompt action, redeem our city from its present disgrace, and relieve its inhabitants from a daily increasing evil.

STREETS—REPAVING AND REPAIRS.

The amount available for the work of the year was as follows :

Amount appropriated.....	\$100,000 00
Balance from 1863	1,160 03
Total	<u>\$101,160 03</u>
Amount expended.....	68,042 56
Leaving balance of.....	<u><u>\$33,117 47</u></u>

of which the sum of \$21,291.66 will be required in final settlement on the contract herein referred to. The Legislature of 1864 authorized an appropriation of \$100,000 under this head, and provided that the expenditure should be *by contract*.

In pursuance of this provision, proposals were invited for the repaving and repairing of the carriage-ways of all paved avenues, streets, squares and public thoroughfares in the city of New York, for the certain period of six

months, commencing July 1, 1864, and ending December 31, 1864.

As expenses had previously been incurred in making repairs by day's work to the extent of about \$10,000, bidders were informed by the advertisement, that no bid would be accepted which in aggregate amount exceeded \$90,000 and that from the amount bid \$10,000 would be deducted and used by the Croton Aqueduct Board to meet the incidental expenses of superintendence and inspection of the proposed work during the said period of six months.

The specification, of the contract contained among other provisions the following, viz. :

That the city should be divided into not more than twenty-one districts, the boundaries to be as this Board might from time to time fix and designate, and that a force should be constantly employed in each of these districts, and that the aggregate number of the pavers and laborers employed, exclusive of foremen, should be not less than two hundred, and that in addition to this force such horses and carts should be employed as might be necessary. It was also provided, that if needed the force should be increased, and that such increased force should be employed in such district or districts and on such street or streets as the Board might from time to time direct.

The proposed form of contract having previously been submitted to the Counsel to the Corporation and approved of by him, the bids received were publicly opened on the 29th day of June last, and the contract awarded to John L. Brown as the lowest bidder therefor. His proposal

was to perform the work, in accordance with the specification, for the sum of \$63,000, including the specific sum of \$10,000, to be used in the discretion of this Board, for the expenses of superintendence, &c.

It is but simple justice to Mr. Brown to say, that the contract has been carried out by him with marked faithfulness and ability.

The application of the contract system to the work of repairs to the street pavements has so far proved beneficial to the public interests. It is doubtful if ever before so great an extent of good work of this kind has been secured at so small an expense to the city.

(For the details of expenditures, see Schedule No. 14.)

WATER PIPES AND LAYING.

The expenditure under this head is mainly in the purchase and laying and repairing of all pipes, stop-cocks, hydrants, and appurtenances required in the extension and maintenance of the area of water distribution.

For the expense necessarily incurred in enlarging the area of water supply, the city is reimbursed by the collection of water rents, which by the existing laws are imposed upon improved property on streets in which the service mains are laid. Owing to the change of grade on Third avenue since the 30-inch main was laid there in 1849, the portion of it from Fiftieth to Fifty-sixth street was covered to a depth reaching at its maximum 25 feet below the street surface. As a precaution against the re-

sult of a leak at so great a depth, this portion of the main has been brought up to its original relative position compared with the street surface. The same plan was carried out here that was adopted in making, last year, the changes necessary in the Fifth avenue mains. New pipes were laid for a certain distance, and at the ends the old pipes were raised to the required grade line.

During the year there have been laid the following quantities of new main pipes, viz. :

Of 6-inch pipe	14,999 lin. feet.
Of 12 " "	4,880 "
Of 16 " "	2,080 "

Total.....	21,959 lin. feet,
or 4 miles, 839 lin. feet.	

The total quantity previously laid	
was.....	290 miles 2,495 feet.
Laid in 1864.....	4 " 839 "

Making to date	294 miles 3,334 feet.
----------------------	-----------------------

Schedules appended (Nos. 23 and 25) give the locality of the new lines of main pipes and the quantity laid in each year, from the organization of this Department, in the year 1849, to this date.

The expenditures under this head are given in detail, in Schedule No. 15.

Fifty-eight new Fire Hydrants have been placed at the localities mentioned in Schedule No. 24. The total number of hydrants in use, is 2,673.

There was available for the operations of the-	
year...\$.....	\$182,221 67
Amount expended	168,545 04
	<hr/>
Leaving a balance of.....	\$13,676 63
	<hr/> <hr/>

WELLS AND PUMPS, REPAIRING.

The expenditure under this head is for the maintenance of such wells and pumps as are yet required for use in the upper parts of the city, and for the proper covering and protection of those which may be abandoned.

The amount available for the year was.....	\$2,781 02
Expended.....	2,700 82
	<hr/>
Balance.....	\$80 20
	<hr/> <hr/>

From the occasional caving in of the street over abandoned wells in various parts of the city, it is manifest that proper care has not heretofore been taken in covering or protecting such wells on their disuse, as would prevent injury to the public.

The first serious accident consequent upon this neglect, which within the knowledge of this Board involved the loss of life, occurred at the intersection of Grand street with the Bowery. This accident took place soon after the supervision of wells and pumps was, by the amended Charter of 1857, transferred to this Department.

Within the past year a similar accident, unfortunately

also involving the loss of life, occurred in Henry street. In the former instance, there would seem to have been no previous warning of danger, the street suddenly sinking beneath the feet of the person injured. In the latter case, the surface had fallen, an hour or two previously, so as to cause a hole near the edge of the sidewalk. Laborers in our employ were engaged in filling this opening, and also endeavoring to keep spectators at a safe distance, when the second cave which caused the loss of life occurred. It was supposed at that time that the person (a lad of about 11 years) who was carried into the well with the surface earth, was the victim of his own imprudent curiosity.

Inquiries promptly made upon the occurrence of the first accident elicited the fact, that the Department previously having charge of the wells and pumps, had preserved no record of the sites of the many wells which, soon after the introduction of Croton water, fell into disuse, and were therefore either filled in or covered over by that Department. For this reason, it is now impossible to ascertain the localities and condition of such wells, as many have been carelessly covered, and we are therefore precluded from making alterations in such covering in advance of the actual development of danger.

In some instances, however, private individuals furnish such information as enables us to make proper examination, and to correct in good season such defects as may be apparent.

BLOCK PAVEMENTS.

Under this head, we include all new stone block pave

ments, whether laid in part or wholly at the expense of the city, or wholly at the expense of the owners of property, who may have been benefited thereby.

The appropriation from which the proportion of cost borne by the city is paid, is made under the head of "Belgian Pavements." This proportion is specified in the respective ordinances, as passed by the Common Council, and is therefore not within the control of this Board.

During the year, contracts were made for the construction of 152,853 superficial yards of this pavement. These contracts, excepting those for the paving of Third avenue, from Fifty-sixth to Eighty-sixth street, of Ninth avenue, from Fifty-fourth street to Broadway, and of Fifty-seventh street, from Eighth to Eleventh avenue, were completed before the close of the year.

In the Schedules Nos. 26 and 27 appended, will be found the localities of the new pavements, and also a list of all streets and avenues now paved with block pavements. The aggregate length of the carriage-ways thus paved is upward of fifty-three miles, of which about forty-five miles have been laid under the supervision of this Department.

Under date of December 21, 1864, this Board deemed it their duty to transmit to your predecessors a special communication on the subject of assessments, for block pavements, and to call their attention to the course then recently taken by the Board of Revision and Correction in the matter of certain Assessment Lists for new block pavements, which had been transmitted to them by the Bureau of Assessors for confirmation.

The ordinances under which these new pavements had been constructed, directed that part of their expense

should be borne by the city at large ; and in accordance with the practice which had, to that time, prevailed, the Bureau of Assessors divided the cost of the improvement between the city and the owners of property benefited, in the proportion specified in the ordinances respectively.

The Board of Revision and Correction, in accordance with a decision of the Supreme Court on this subject, refused to confirm the assessments thus prepared, and directed the return of the lists to the Board of Assessors, with instructions to them to assess the whole of the expense of the improvement upon the property benefited. This course has, as we learn, been taken by the Board of Assessors, and upon the expiration of the time allowed for the filing of objections, the assessments thus prepared will probably be confirmed. With few exceptions, the ordinances passed for the construction of block pavements, not yet acted upon, provide for the payment either of the whole or of a part of the expense by the city at large. (*See schedule No. 28 annexed.*)

In view of this action on the part of the Board of Revision and Correction, it was felt that much injustice might be done to property-owners on the lines of the contemplated improvements, by contracting for such improvements, unless opportunity should have been allowed for amendment or repeal of the present ordinances. It was therefore stated, in our communication on the subject, "that, until further action shall have been taken by your Honorable Body, with regard to the ordinances mentioned, this Board will not feel at liberty to let any contracts based thereon." The importance of such action is respectfully urged upon your Honorable Body. This communication, with the opinion of the Counsel to the

Corporation on the same subject, are printed in the Journal of the Board of Aldermen for 1864, pp. 586-594.

As before stated, the appropriation for the proportion of the expense assumed by the city in the construction of new block pavements, is made under the head of "Belgian pavements."

The appropriation for the year was.....	\$50,000 00
Unexpended balance from 1863, nearly the whole of which, it was anticipated, would be required in final settlements in contracts made in same year.....	148,457 98
Amount expended.....	<u>\$67,185 34</u>
Leaving balance.....	\$131,272 64

Had the Board of Revision and Correction continued to confirm assessments for new block pavements, in the proportions specified in the respective ordinances which authorized their construction, this balance would be nearly, if not quite exhausted, in payments on the contracts heretofore made.

STREET IMPROVEMENT FUND.

This fund, which is created by the issue and sale of assessment bonds in pursuance of the law of 1852, is applied to the monthly and final payments on all contracts for the construction of sewers and pavements on Trust Account.

The expenditures under this head form no part of the expenses proper either of this Department or of

the city, as the treasury is reimbursed to the full amount of outlay by the imposition and collection of assessments.

Schedule No. 19 exhibits the various payments which have been made on contracts of this nature during the past year.

THE QUESTION OF IMPROVEMENT IN THE PIPE DISTRIBUTION.

It has been a matter of complaint that consumers in the lower districts of the city failed to get water in the upper stories of their buildings; latterly the evil has been so urgently presented on the part of a few persons, that we deemed it expedient to have some special investigation made with a view to its correction.

By this investigation, it has been found that the defects in our pipe distribution arise mainly from three causes:

First, An insufficiency of large pipe mains through the city.

Second, The infrequent connection of the existing large pipe mains with the small supply pipes.

Third, The infrequent connection of the supply pipes with each other.

The Croton water was introduced in 1842. At that time, and until 1849, the city was connected with the Receiving Reservoir by two mains, each thirty-six inches diameter, both leading down Fifth avenue and connecting with the Distributing Reservoir at Forty-second street. In

1849 a main thirty inches diameter was laid from the Receiving Reservoir through seventy-ninth street to Third avenue, thence down that avenue to Forty-second street, and through that street to connect with the Distributing Reservoir.

In 1856 another thirty-inch main was added, leading down Eighth avenue, and in 1862 a forty-eight inch main was laid down the Fourth avenue to Thirty-eighth street, connecting with a twenty-inch tranverse main (previously laid) in Thirty-eighth street. These two new mains were also connected with the Distributing Reservoir.

The effect of this last connection on the Distributing Reservoir, has been to raise the water there during the night to its high-water lines, established by Mr. Jervis (late Chief Engineer,) at four feet below the high water of the Receiving Reservoir. Before the connection of the four-foot main, the water stood during the day at an average of nineteen feet below the high water of the Receiving Reservoir.

There exists then, nominally, five leading mains in the city now; virtually however, but four, for the largest stops at Thirty-eighth street.

These mains are located as follows:

First, The old thirty-inch main, which leads through Seventy-ninth street to the Third avenue, where it throws off a twelve-inch branch for the supply of Harlem; thence following the Third avenue to Fourteenth street, where it connects with one of the thirty-six inch mains before mentioned.

Second, A thirty-six inch main comes down the Fifth avenue to Twenty-third street, connecting incidentally with the Distributing Reservoir; thence it follows Broadway to Fourteenth street, down Fourteenth street to avenue A, and along avenue A to Houston street, where it is reduced to a twenty-four inch main; at this reduced size it follows avenue A to Division street, where it ceases to be a main, connecting at that point with a twelve-inch pipe.

Third, The other thirty-six inch main is laid beside the last mentioned, down Fifth avenue to the Distributing Reservoir; thence issuing from the south side of this reservoir, of the same diameter, it follows the Fifth avenue and Broadway to Houston street, where it is reduced to a thirty-inch main; continuing down Broadway it is reduced at Canal street to a twenty-four inch main, at Fulton street to a twenty-inch main, and at Water street to a sixteen-inch main, terminating near South Ferry opposite South street.

Fourth. The new forty-eight-inch main, laid in 1861, passes from the large reservoir through Eightieth street to the Fourth avenue; thence down the Fourth avenue to Thirty-eighth street, where it terminates for the present. At Forty-second street it connects, by a branch of the same size, with the Distributing Reservoir.

Fifth. The thirty-inch main, laid in 1856, leaves the west side of the old Receiving Reservoir on Eighty-first street, reaches the Eighth avenue, and follows this avenue to Forty-second street, where it sends a branch to the Distributing Reservoir. At Forty-second street it turns west

to the Ninth avenue ; thence it follows the Ninth avenue to Twenty-ninth street, where it is reduced to a twenty-four-inch pipe, which continues on the same avenue to Fourteenth street, where it terminates.

If we assume, for the present, that below Houston street there is consumed or wasted one-half of the fifty-four millions of gallons at this date known to be delivered to the city, it will be observed that the first and second mains (thirty-inch and thirty-six-inch) reach this line reduced to one of twenty-four inches diameter. The third (thirty-six-inch) crosses it on Broadway reduced to thirty inches. The fourth and fifth mains do not reach this part of the city.

To supply, then, the lower half of the city with water, there are now laid in that portion but two mains, one of thirty-inch diameter on Broadway, and one of twenty-four-inch diameter on avenue A. A large portion of the water used in the lower part of the city (*i. e.*, below Houston street), must evidently find its way to the consumers through the twelve and six-inch pipes, which connect, more or less, the upper with the lower half of the city ; hence the loss of head, from which the consumer claims to suffer so much inconvenience.

The following facts will further illustrate the condition of the city as regards its pipe mains .

	Sq. Feet.
The mains crossing Seventy-fifth street towards the city, (5) have a united area of.....	36.52
The aggregate area of mains crossing Thirty- fifth street, (4) amounts to.....	23.95

	Sq. ft.
The mains crossing Twenty-fifth street, (4) have an aggregate area of.....	21.16
Crossing Thirteenth street (3).....	14.19
Crossing Houston street (2).....	8.05
Crossing Chambers street (2).....	4.53

It will be observed that at Houston street the area of pipe mains is reduced to one-third of the area of the mains crossing Thirty-fifth street.

On the accompanying profile of the Fifth avenue and Broadway, between the Distributing Reservoir and the Battery, there is delineated the day pressure of the water along the line of street, and the night pressure on the same line. The observations were taken by means of an Ashcroft gauge, applied to the hydrants situated on this line of street. During the day, from nine to twelve, and from one to four, the city consumption is assumed to be at its maximum, and to vary but little at any one point; during the night, between the hours of two and five A. M., the consumption is assumed to be at its minimum. The observations were taken within the hours mentioned.

The hydrants referred to are not connected directly with the large main laid in the Fifth avenue and Broadway. They are connected with the twelve-inch pipes laid on either side of that main, which is connected only at long intervals with its several branches. The pressure on the main exceeds the pressure derived from the small pipes; it cannot, however, be accurately ascertained, without pening the street at intervals, and tapping the large mains, in operation which, in such a crowded thoroughfare, would

be attended with considerable inconvenience to the public.

The surface of the paving of Broadway at Canal street, is situated ninety-nine feet below high water of the Receiving Reservoir. This is the amount of pressure which the gauge would indicate there were the water at rest; that is, were there no draught whatever on the pipe.

During the day hours of 9 to 12, A. M., the gauge pressure indicates a head of fifty-three feet above the street; the head lost is, therefore, forty-six feet, as indicated at the hydrant. Within the tenements, on either side, the loss, for obvious reasons, must be somewhat greater.

During the night, between 2 and 3, A. M., the head lost does not exceed fifteen feet.

The day flow of water now, through each of the thirty-six-inch pipes where they cross Forty-first street, is estimated to be 27.65 cubic feet per second.

This gives a velocity of 3.91 feet per second above Thirty-eighth street.

The forty-six feet of head lost at Canal street, is a necessary effect of the great velocity of the water in the mains—a velocity at least double that which should prevail in this city, where the head of water, under the best condition of pipe service which the case admits of, can never be otherwise than moderate.

As a first step towards the principal mode of correction within our power, it is desirable to settle upon a rate of maximum velocity of the water within the mains, which

shall govern and limit the correction, while it will, at the same time, be moderate enough to insure a much greater pressure of water throughout the city.

It would have been desirable to have ascertained, by experiment, the gain of pressure within the city when the velocity, as during the night hours, is reduced to one-half and one-third of that prevailing during the day ; but where there are four different mains in operation such an experiment is not easily made, and would hardly have given satisfactory results. In Brooklyn, where there is still but one pipe main from its receiving reservoir, an experiment to ascertain the actual relation of the flow to the pressure can be made with some satisfaction. Mr. Lane, the Chief Engineer of the Brooklyn Water Works, has accordingly, for our general benefit, during a period of seven days, made observations on that main, and, simultaneously, on the water drawn from the Ridgewood Reservoir, which are of valuable service in this connection.

No calculations founded on existing formulæ can determine, with accuracy, the head of water prevailing in a pipe main at any given point of the city, because they cannot define and include the complicated action within the city pipes, that action being extremely irregular in its character, and not ascertainable with accuracy by any means in present use. It may be assumed, but the assumption cannot be based on exact data, and will be often wide of the truth. For the same reasons no calculations *per se*, however made, can correctly define the remedy for the evil we have been considering. The remedy proposed must necessarily, in itself, be tentative. The judgment of the

Engineer, founded on such experimental investigations as the case admits of, and calculations subordinate to these, will assume a mode and measure of correction which will bring about the desired improvement, but it is a measure to be itself corrected by the effect of each installment of the plan adopted as the work progresses.

The flow of water through the existing mains, where they cross Fortieth street, is assumed to be about as follows :

DIAMETER OF MAIN.	POSITION.	ASSUMED DELIVERY INTO THE CITY IN 24 HOURS.	
		N. Y. Gallons.	
30-inch.....	8th avenue..	9,000,000	
36-inch.....	5th avenue..	14,000,000	
36-inch.....	5th avenue..	14,000,000	
48-inch.....	4th avenue..	7,000,000	This four-foot main stops at 38th street, where it connects with a 20-inch pipe running east and west.
30-inch.....	3d avenue...	8,600,000	A branch from this main delivers water north towards Harlem. Harlem 12-inch pipe from the main last mentioned.
	3d avenue...	1,400,000	
		54,000,000	

According to the above statement, the Broadway main delivers fourteen millions N. Y. gallons, into the city, in twenty-four hours. This gives an average flow of 20.74 cubic feet per second.

The following table shows the day and night consumption of the city of Brooklyn, as ascertained by hourly

observations at the Ridgewood Reservoir, between the 24th and 31st days of May, 1864 :

NIGHT.	DAY.	MAY.	TWENTY-FOUR HOURS' CONSUMPTION.
* 6 P. M. to 6 A. M.	6 A. M. to 6 P. M.		
Tues. & Wed..... 2,824,197	4,654,895	Wed., 25th. 6,978,592	
Wed. & Thur..... 3,835,499	4,558,781	Thurs., 26th.... 7,894,280	
Thurs. & Fri..... 2,942,048	4,776,696	Friday, 27th... 7,718,744	
Fri. & Sat..... 3,043,120	5,455,872	Saturday, 28th. 8,498,992	
Sat. & Sun..... 2,898,866	3,683,196	Sunday, 29th.. 6,577,062	
Sun. & Mon.. ... 2,428,740	4,507,287	Monday, 30th.. 6,936,027	
Mon. & Tues..... 2,754,459	5,650,785	Tuesday, 31st.. 8,405,194	
	19,721,929		53,008,891
Deduct Sunday } and Monday. }	2,428,740	Six days.....	6,111,936
	17,293,189		46,896,955
Average.....	2,882,198	One week day..	7,816,159

The consumption of these six days, omitting Sunday, averaged, per day.....7,816,159 N. Y. gals.

Of this there was consumed :

During the twelve day-hours, between

6 A. M. and 6 P. M..... 4,933,961 “

During the twelve night-hours, be-

tween 6 P. M. and 6 A. M..... 2,882,198 “

The consumption per hour during the day-hours was equal to 1.262 of the average hourly consumption for the twenty-four hours.

During the night it was 0.737 of the same.

The proportion of water used in New York for manufacturing and commercial purposes must be greater than in Brooklyn. We will therefore assume the day-flow in

New York as equal to 1.33 of the average consumption there of the twenty-four hours.

This ratio gives the rate of 27.65 cubic feet per second, as already stated, for the day-flow in the New York thirty-six inch main where it crosses Thirty-ninth street, and the velocity of 3.91 feet per second. This extreme velocity engenders a loss of head at Canal street of forty-six feet, as already mentioned.

Some time has been spent, with but little satisfaction, in making calculations on the Broadway main, to ascertain the corrective effect of an initial velocity of two feet per second, instead of its present rate of 3.91 feet per second. They have led, however, to the conviction that an additional head of twenty-five feet could thus be secured at Canal street, and proportionally over the city. The Brooklyn experiments fully justify this conclusion.

The calculations on the New York main give a loss of head of but fifteen feet at Canal street, with a velocity of two feet per second. The distance of Canal street from the Receiving Reservoir is fourteen thousand nine hundred feet.

Applying the same formula to the Brooklyn main, which is of the same diameter, (thirty-six reduced to thirty,) and using the same velocity of two feet per second, the calculations give a loss of head, at the corner of Clinton and Joralemon streets, of twenty feet. The distance is thirty-three thousand one hundred and fifty feet.

Mr. Lane's experiments show an average of twenty-four feet loss of head there at 10 A.M. The actual velocity between 6 A.M. and 6 P.M., during the six week days of these experiments, was 2.067 feet per second.

All the branchings were taken into account in these calculations. It will be observed that the length of the Brooklyn main, on which, at present, an average loss of twenty-four feet of head obtains during the forenoon, is thirty-three thousand one hundred and fifty feet, while the length of that part of the New York main referred to is but fourteen thousand nine hundred feet.

A second main is already felt to be very desirable in Brooklyn, where the advantages of a strong head of water have been enjoyed and appreciated. A velocity of two feet per second will probably be received there as a limiting maximum velocity for the pipe mains.

We will assume two feet per second as the maximum velocity of flow which should determine the number and size of pipe-mains necessary to secure a fair pressure of water throughout the city.

The following table will show the pipe-mains required to insure a near approximation to this condition of the velocity :

NUMBER AND POSITION OF PIPE MAINS AT THE CROSSING OF THIRTY-EIGHTH STREET.				
	POSITION.	DRAINS. INCHES.	AREAS. SQ. FEET.	DAY FLOW, 6 A.M. to 6 P.M. (at 2 feet per second.) cubic feet per second.
Laid.....	Third avenue....	80	4.9087	9.817
"	Fourth avenue....	48	12.5664	25.133
"	Fifth avenue....	36	7.0686	14.137
"	"	36	7.0686	14.137
"	Eighth avenue....	80	4.9087	9.817
Proposed.....	Tenth avenue....	48	12.5664	25.133
			49.0874	98.174

The rate of 52.6 millions of gallons consumption, on which our reasoning has been founded, would require at the velocity of 2 feet per second an ability to deliver at the rate of 104 cubic feet per second. The above table does not quite reach this amount.

Below a transverse line represented by Houston street, I will assume that one-half of the present delivery of water into the city is consumed, namely, 26.3 millions of New York gallons daily. The velocity within the mains where they cross this line, so far as can be now ascertained, will not exceed 1.2 feet per second. The pipe area necessary to deliver this amount of water at the crossing of this line, with this velocity, would be 30 square feet. In the following table the aggregate area of the pipe mains there defined, amounts to 36 square feet. The excess will in some measure compensate for the lack of sufficient pipe area at the crossing of Thirty-eighth street.

TABLE showing the position and size of the mains at their crossings of Houston street—velocity 1.2 feet per second.

POSITION OF MAIN AT CROSSING OF HOUSTON STREET.	DRAINS.]	AREA.	DAY FLOW, 6 A. M. to 6 P. M.
	INCHES.	SQ. FEET.	(1.2 feet per second.) CUBIC FEET.
Avenue C.....	30	4.9087	5.891
Allen street.....	36	7.0686	8.482
Bowery.....	36	7.0686	8.482
Broadway.....	30	4.9087	5.890
Greenwich street.....	30	4.9087	5.891
Macdougall street.....	36	7.0686	8.482
		35.9819	43.118

In the accompanying sketch of the city, we have had drawn upon a map of the city, the supposed position of the

new mains and of the extension of the old ones. Towards the lower part of the city, the mains concentrate and unite.

Our attention has been thus far confined to the deficiency in the extent of pipe-mains. The next most noticeable evil of the present pipe service is the manner in which these pipe-mains communicate with the network of small pipes, whence the water is drawn by the consumers.

On the Broadway main, between the Distributing Reservoir and Canal street, there is one space of 4,540 feet on which no connection exists with the small pipe service. Over this distance of 4,540 feet, the water is passed along Broadway by a 12-inch pipe, delivering from this 12-inch pipe into the 6-inch pipes of the cross streets. The other spaces within the points mentioned are 3,060, 2,700 and 2,640 feet. Within these distances the same absence of all connection with the small pipe service exists. The effect of this roundabout way of supplying the cross streets with water must be to diminish very sensibly what may be called the normal pressure existing in the mains, thus to increase unnecessarily an evil formidable from other causes. The new mains should have a branch at every third or fourth street.

This will render a greater number of stop-cocks necessary, but the consumer otherwise cannot receive the full benefit of the costly works under consideration.

The next prominent evil refers to the manner in which the small pipes have been laid, connecting at long intervals with each other. A more frequent connection is ne-

cessary to give uniformity to the water pressure, as well as to reduce the losses by friction to a minimum. To correct this evil in the old districts would involve an amount of expense and inconvenience not easily calculated or appreciated excepting under actual experience.

While, however, we submit the above statement and calculations for your consideration, we feel obliged also to refer to the reasons which have hitherto governed our action in this matter, and which still continue to have great weight in our recommendations.

We are satisfied that the great object in the construction of the Croton works was obtained, when abundant water was brought to every door, and its convenient delivery assured. Its moderate consumption and comparatively limited distribution during the early years of the operation of the works drew lightly upon the capacity of the pipes, and of course the temporary convenience of higher head was naturally felt; this has unfortunately led to unreasonable expectations on the part of the first consumers, and now that the city has greatly increased in area and population, with consequent increased demands upon the water service, they are inclined to consider that an unjust deprivation which after all but moderates an excessive privilege.

Now it is readily understood on their part how partial any redistribution, merely for their benefit, would prove, for it must not be forgotten that many portions of the city now thickly built over, are of such elevation that the most favorable arrangement would fail to deliver the water above the basements of the houses, but whose owners would yet be taxed for an improvement which procured them no advantage.

It will also be seen, that when the desired alteration was effected, the same process of diminution would be likely to occur again, under further changes in the character of the consumption. It would be found, therefore, practically impossible to provide a perfect system which should always meet the varying necessities of the future. The complaint of a single locality must inevitably extend to all parts of the city, and compel constant and expensive changes throughout; the complicated network following such wide and frequent corrections, leading often to difficulties not easily foreseen. Besides, the cost of such remedies would be far larger than is supposed—our unreserved concession to all the claims likely to be made would establish an annual expense upon the city not in our judgment justified by a corresponding benefit to the citizens.

The applicants especially do not seem to understand, that in the substitution of any measure of relief, the immediate inconvenience to themselves and to the public at large would be very great. The thoroughfares, which are now inadequate to carry the traffic and trade, would then be blocked, the streets torn up, and in many cases unavoidably monopolized. Three years at least, under the most favorable progress, would be required to complete any efficient plan such as the one proposed, and during this time, throughout all the district included in the improvement, the ordinary business of the community would be seriously disturbed, while in some quarters it would be absolutely suspended. Still further, the inhabitants would often be compelled to submit to a total deprivation of water. The numerous connections necessary to be made would force us to cut off whole streets from their supply,

and to hold them in this condition until the lines were properly joined.

The great care always demanded in carrying out hydraulic works would be equally imperative in this instance; while the unusual difficulties under which we would labor in laying down an extensive system of pipes, through an old and crowded portion of the city, would almost certainly occasion serious delays in the execution of the work.

In addition to these positive inconveniences attendant upon the application of the plan, we are disposed to think, in view of the rapid growth of the city, and the consequent increased demand upon the water supply, that so long as we are prevented from extending our works so as to include a reserve of storage to meet them, that any greater freedom given to consumers already generously supplied, would be a matter of doubtful expediency.

We feel therefore obliged to suggest that the most immediate and efficient relief would be found in an economical use of the water on the part of all takers. We feel even justified in saying that a portion of the lost pressure might be restored in the whole service, if the citizens themselves would be careful in its management. In their hands the remedy to a certain extent lies; it is *their duty* to arrest the utterly wicked waste that everywhere prevails, and to which their neglect universally contributes. They are to consider that when they claim so special a protection, they are made equally responsible for any abuse. And we now can only continue to express our disappointment, that, after repeated representations of the evil, neither conscience nor

interest has seemed to operate in checking this reckless extravagance.

All of which is respectfully submitted,

By your obedient servants,

THOMAS STEPHENS,
ROBERT L. DARRAGH,
A. W. CRAVEN,
Croton Aqueduct Board.

INDEX TO SCHEDULES.

- No. 1, Weekly receipts for water rents.
- “ 2, “ “ penalties on water rents.
- “ 3, “ “ taps in water pipes.
- “ 4, “ “ sewer connections.
- “ 5, “ “ vault permits.
- “ 6, Petty cash receipts.
- 7, Payments into city treasury.
- “ 8, Aqueduct repairs and improvements.
- “ 9, Contingencies.
- “ 10, Croton water-works extension.
- “ 11, Salaries.
- “ 12, Sewers—repairing and cleaning.
- “ 13, Sewerage system surveys.
- “ 14, Streets—repaving and repairs.
- “ 15, Water pipes and laying.
- “ 16, Wells and pumps, repairing.
- “ 17, Russ pavement improvement.
- “ 18, Belgian pavement, expenses.
- “ 19, Street improvement fund, expenses.
- “ 20, Ledger balance—December 31, 1864.
- “ 21, Yearly revenue from Croton water.
- “ 22, “ “ sewer connections.
- “ 23, Main water pipes laid in 1864.
- “ 24, Fire hydrants—new, “

- “ 25, Main water pipes, sizes and total length to December 31, 1864.
- “ 26, New block pavements, contracts made in 1864.
- “ 27, Block pavements, localities of all now laid.
- “ 28. Ordinances for pavements, as passed by Common Council, for which contracts have not been made.
- “ 29, Sewerage extension in 1864.
- “ 30, Length of sewerage in each year from 1849 to date.
- “ 31, Ordinances for sewers, for which contracts have not been made.
- “ 32, Miscellaneous contracts.
- “ 33, Localities of wells filled in or covered during the year.

SCHEDULE No. 1.

SHOWING THE WEEKLY RECEIPTS FOR WATER RENTS.

1864.		Brought for'd..	\$283,402 89
Jan. 8.....	\$1,403 20	July 14.....	60,246 16
" 14.....	3,300 75	" 21.....	75,420 95
" 21.....	2,329 25	" 28.....	105,341 15
" 28.....	3,360 36	Aug. 4.....	111,843 90
Feb. 4.....	1,988 30	" 11.....	7,853 00
" 11.....	1,840 70	" 18.....	7,994 92
" 18.....	2,095 25	" 25.....	6,369 85
" 25.....	3,490 60	Sept. 1.....	7,793 95
Mar. 3.....	2,945 53	" 8.....	4,719 35
" 10.....	1,974 75	" 15.....	7,400 35
" 17.....	2,237 75	" 22.....	8,793 53
" 24.....	1,970 69	" 29.....	7,286 15
" 31.....	2,095 22	Oct. 6.....	8,355 75
April 7.....	2,263 70	" 13.....	16,862 65
" 14.....	1,638 47	" 20.....	15,926 15
" 21.....	1,053 75	" 27.....	15,585 50
" 28.....	1,510 00	Nov. 3.....	26,912 40
May 5.....	11,448 56	" 10.....	5,675 80
" 12.....	25,905 25	" 17.....	19,010 80
" 19.....	24,644 75	" 25.....	19,915 80
" 26.....	28,348 65	Dec. 1.....	18,810 64
June 2.....	25,292 10	" 8.....	12,808 15
" 9.....	25,637 56	" 15.....	17,664 50
" 16.....	21,420 00	" 22.....	12,468 13
" 23.....	24,177 55	" 29.....	5,592 53
" 30.....	23,779 50	" 31.....	5,552 77
July 7.....	35,250 70		
Carried forw'd, \$283,402 89		TOTAL.....	<u>\$895,612 72</u>

SCHEDULE No. 2,
SHOWING THE WEEKLY RECEIPTS FOR PENALTIES ON
WATER RENTS.

1864.		Brought forw'd, \$2,720 94
Jan. 8	\$64 55	July 14..... 85 65
“ 14	109 50	“ 21..... 81 15
“ 21	110 70	“ 28..... 118 65
“ 28	159 15	Aug. 4..... 351 29
Feb. 4	153 15	“ 11..... 280 45
“ 11	109 05	“ 18..... 242 85
“ 18	163 95	“ 25..... 210 58
“ 25	126 60	Sept. 1..... 192 33
March 3.....	116 70	“ 8..... 128 13
“ 10.....	121 20	“ 15..... 174 63
“ 17.....	97 50	“ 22..... 192 25
“ 24.....	109 95	“ 29..... 127 10
“ 31.....	93 45	Oct. 6..... 202 05
April 7.....	162 15	“ 13..... 258 95
“ 14.....	103 80	“ 20..... 270 90
“ 21.....	59 70	“ 27..... 340 75
“ 28.....	63 15	Nov. 3..... 699 30
May 5.....	130 80	“ 10..... 346 75
“ 12.....	135 00	“ 17..... 828 40
“ 19.....	79 05	“ 25..... 975 50
“ 26.....	59 85	Dec. 1..... 706 00
June 2.....	58 54	“ 8..... 484 35
“ 9.....	90 15	“ 15..... 642 30
“ 16.....	101 40	“ 22..... 525 60
“ 23.....	44 70	“ 29..... 223 95
“ 30.....	66 30	“ 31..... 180 75
July 7.....	30 90	
Carried forw'd, \$2,720 94		TOTAL..... <u>\$11,621 55</u>

SCHEDULE No. 3.

SHOWING THE WEEKLY RECEIPTS FOR TAPS IN WATER
PIPES.

1864.		Brought forw'd. \$1,366 25
Jan. 8.....	\$00 00	July 14..... 40 25
" 14.....	19 00	" 21..... 51 75
" 21.....	19 75	" 28..... 73 75
" 28.....	8 75	Aug. 4..... 46 00
Feb. 4.....	27 75	" 11..... 37 25
" 11.....	29 00	" 18..... 44 00
" 18.....	38 75	" 25..... 53 25
" 25.....	21 75	Sept. 1..... 53 25
Mar. 3.....	44 50	" 8..... 58 25
" 10.....	38 50	" 15..... 34 50
" 17.....	52 00	" 22..... 26 00
" 24.....	40 75	" 29..... 47 75
" 31.....	80 50	Oct. 6..... 52 50
April 7.....	113 75	" 13..... 39 25
" 14.....	92 50	" 20..... 117 25
" 21.....	79 50	" 27..... 243 25
" 28.....	119 50	Nov. 3..... 108 50
May 5.....	126 25	" 10..... 33 50
" 12.....	69 75	" 17..... 52 00
" 19.....	50 50	" 25..... 45 00
" 26.....	66 75	Dec. 1..... 54 25
June 2.....	44 50	" 8..... 33 00
" 9.....	43 75	" 15..... 24 00
" 16.....	16 25	" 22..... 21 75
" 23.....	37 00	" 29..... 9 00
" 30.....	58 25	" 31..... 13 50
July 7.....	27 00	
Carried forward. \$1,366 25		TOTAL..... <u>\$2,779 00</u>

SCHEDULE No. 4.

SHOWING THE WEEKLY RECEIPTS FOR PERMITS FOR SEWER CONNECTIONS.

1864.		Brought forw'd.	\$8,947 00
Jan. 8.....	\$184 00	July 14.....	400 00
“ 14.....	0 00	“ 21.....	240 00
“ 21.....	290 00	“ 28.....	230 00
“ 28.....	100 00	Aug. 4.....	220 00
Feb. 4.....	315 00	“ 11.....	338 00
“ 11.....	367 00	“ 18.....	300 00
“ 18.....	232 00	“ 25.....	230 00
“ 25.....	140 00	Sept. 1.....	304 00
Mar. 3.....	357 00	“ 8.....	270 00
“ 10.....	420 00	“ 15.....	289 00
“ 17.....	453 00	“ 22.....	277 00
“ 24.....	302 00	“ 29.....	360 00
“ 31.....	223 00	Oct. 6.....	672 00
April 7.....	375 00	“ 13.....	220 00
“ 14.....	240 00	“ 20.....	120 00
“ 21.....	530 00	“ 27.....	279 00
“ 28.....	356 00	Nov. 3.....	231 00
May 5.....	420 00	“ 10.....	198 00
“ 12.....	700 00	“ 17.....	246 00
“ 19.....	512 00	“ 25.....	130 00
“ 26.....	394 00	Dec. 1.....	90 00
June 2.....	235 00	“ 8.....	120 00
“ 9.....	220 00	“ 15.....	178 00
“ 16.....	392 00	“ 22.....	250 00
“ 23.....	550 00	“ 29.....	196 00
“ 30.....	320 00	“ 31.....	40 00
July 7.....	320 00		
Carried forw'd.	\$8,947 00	TOTAL.....	\$15,375 00

SCHEDULE No. 5.

SHOWING THE WEEKLY RECEIPTS FOR PERMITS TO CON-
STRUCT VAULTS.

1864.		Brought forw'd..	\$7,582 82
Jan. 8.....	\$0 00	July 14.....	1,813 12
“ 14.....	210 00	“ 21.....	527 00
“ 21.....	671 25	“ 28.....	280 00
“ 28.....	60 00	Aug. 4.....	36 00
Feb. 4.....	153 25	“ 11.....	225 00
“ 11.....	919 20	“ 18.....	0 00
“ 18.....	10 62	“ 25.....	158 50
“ 25.....	159 00	Sept. 1.....	464 00
Mar. 3.....	1,615 25	“ 8.....	0 00
“ 10.....	0 00	“ 15.....	0 00
“ 17.....	82 80	“ 22.....	120 00
“ 24.....	144 90	“ 29.....	22 50
“ 31.....	0 00	Oct. 6.....	0 00
Apr. 7.....	256 05	“ 13.....	0 00
“ 14.....	544 35	“ 20.....	795 15
“ 21.....	75 95	“ 27.....	2,616 00
“ 28.....	330 37	Nov. 3.....	0 00
May 5.....	122 50	“ 10.....	0 00
“ 12.....	223 49	“ 17.....	2,695 55
“ 19.....	57 30	“ 25.....	187 20
“ 26.....	207 00	Dec. 1.....	0 00
June 2.....	235 12	“ 8.....	343 85
“ 9.....	367 37	“ 15.....	1,812 00
“ 16.....	288 30	“ 22.....	0 00
“ 23.....	0 00	“ 29.....	8 10
“ 30.....	0 00	“ 31.....	0 00
July, 7.....	843 75		
Carried forw'd..	\$7,582 82	TOTAL.....	<u>\$19,686 79</u>

SCHEDULE NO 6.

SHOWING THE RECEIPTS FOR WORK DONE AND MATERIALS
SOLD AND ACCOUNTED FOR AS PETTY CASH.

1864.

Jan.	4.	P. J. Rowe, contractor, repairing pipe on sewer in Corlears street, from Grand street to the East River.	\$25 20
Mar.	28.	Steamboat City of Hartford, putting in stopcock box on Pier No. 24, East River.....	9 00
Mar.	28.	Northern Transportation Company, repairing stopcock, hydrant, &c., at Pier No. 24, East River....	30 00
April	18.	Slade & Colby, removing fire hy- drant opposite No. 76 Leonard street.....	23 20
April	28.	Cash for old iron sold from Courtlandt street.....	23 00
April	29.	Forty-second and Grand street Ferry Railroad Company, for patent sleeve.....	10 00
May	4.	Continental Bank Note Engraving Company putting in pipe, stop- cock, &c., Liberty and Washing- ton streets.....	96 75
May	23.	Harlem Railroad Company, patent sleeve.....	10 00
July	2.	Brooklyn Ferry Company, removing fire hydrant, &c... ..	91 51
Aug.	22.	Town of Yorktown Bounty Tax re- turned.....	55 88

Sept. 20.	Government Hospital, putting in branch &c., in State street....	25 00
Nov.	Village of Yonkers, portion of assess- ment for Bridge, Warburton ave- nue, returned.....	192 00
Nov. 12.	Cash, changing fire hydrant, Pearl and Whitehall streets.....	8 00
Nov. 30.	Alexander M. Ross, removing fire hy- drant, Broadway and Morris streets	57 19
Dec. 20.	H. O. Kane, Ballast stone.....	114 00
TOTAL.....		<u>\$770 73</u>

SCHEDULE No. 7.

SHOWING THE WEEKLY PAYMENTS INTO THE CITY TREASURY
AS PER THE RECEIPTS OF THE CITY CHAMBERLAIN.

1864.		Bro't forward.	\$304,019 90
Jan. 8.....	\$1,651 75	July 14.....	62,585 18
" 14.....	3,639 25	" 21.....	76,320 85
" 21.....	3,420 95	" 28.....	106,043 55
" 28.....	3,688 26	Aug. 4.....	112,497 19
Feb. 4.....	2,642 45	" 11.....	8,733 70
" 11.....	3,264 95	" 18.....	8,581 77
" 18.....	2,540 57	" 25.....	7,022 18
" 25.....	3,937 95	Sept. 1.....	8,807 53
March 3.....	5,078 98	" 8.....	5,175 73
" 10.....	2,554 45	" 15.....	7,898 48
" 17.....	2,923 05	" 22.....	9,413 75
" 24.....	2,568 29	" 29.....	7,843 50
" 31.....	2,492 17	Oct. 6.....	9,282 30
April 7.....	3,170 65	" 13.....	17,410 85
" 14.....	2,619 12	" 20.....	17,229 45
" 21.....	1,798 90	" 27.....	19,064 50
" 28.....	2,379 02	Nov. 3.....	27,951 20
May 5.....	12,248 11	" 10.....	6,254 05
" 12.....	27,033 49	" 17.....	22,832 75
" 19.....	25,343 60	" 25.....	21,253 50
" 26.....	29,076 25	Dec. 1.....	19,660 89
June 2.....	25,865 26	" 8.....	13,789 35
" 9.....	26,358 83	" 15.....	20,320 80
" 16.....	22,217 95	" 22.....	13,265 48
" 23.....	24,809 25	" 29.....	6,800 31
" 30.....	24,224 05	" 31.....	5,787 02
July 7.....	36,472 35		
Carried forw'd	\$304,019 90	TOTAL.....	<u>\$945,845 79</u>

SCHEDULE No. 8.

AQUEDUCT REPAIRS AND IMPROVEMENTS.

Appropriation by the Common Council for the year 1864	\$51,000 00
Unexpended balance from 1863	33,072 11
	<hr/>
	<u>\$84,072 11</u>

EXPENDITURES.

Blacksmith work	\$456 51
Cartage	3,745 13
Fencing	114 20
Fifth avenue mains	841 85
Hardware	608 54
High Bridge	932 40
Horse and wagon hire	351 82
Iron work	180 73
Iron pipes and castings	73 50
Lime, cement, and sand	274 01
Labor	24,721 22
Lumber	1,379 33
Oil	306 60
Paint and painting	133 84
Powder	105 37
Repairs to Superintendents' dwellings	254 35
Reservoir, Receiving	150 50
Reservoir, Distributing	367 79
Seed	2 46
Stone and brick	39 00
Sundry bills	211 68
Taxes	1,369 67

Tools and repairing	33 91
John L. Brown, contractor, Fifth avenue main	12,240 79
J. W. and J. F. Starr, contractors, thirty-six inch pipes	7,691 98
	<hr/>
	\$56,587 23
Unexpended balance	27,484 88
	<hr/>
Total	<u><u>\$84,072 11</u></u>

SCHEDULE No. 9.

CONTINGENCIES CROTON AQUEDUCT BOARD.

Appropriation by the Common Council for the year 1864.....	\$5,000 00
Unexpended balance from 1863.....	653 72
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	\$5,653 72
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EXPENDITURES.

Advertising.....	\$610 91
Engineer's office.....	45 41

Miscellaneous Bills.

Seymour V. Moody, services as temporary clerk	\$1,000 00
Edward J. O'Keefe, services as tem- porary clerk.....	1,000 00
Theodore Weston, services exam- ining steam engines, &c.....	206 40
Charles McMillen, services exam- ining steam engines, &c.....	91 90
J. Bien, printing maps Croton River survey.....	100 00
A. W. Craven, sundry expenses on line of Aqueduct.....	88 25
Bunker & Co., refreshments to Com- mittee from Philadelphia.....	74 75
R. M. Vanden Hoovel, services as en- gineer, examinations relative to re- moval of Aqueduct Eighty-eighth	

and Ninetieth streets, and Ninth and Tenth avenues.....	50 00	
Olone & Brothers, frames for maps Croton River survey.....	43 50	
Augustus Runkle, photographic views of gate-houses.....	60 00	
James P. Kirkwood, services as en- gineer, relative to distribution of water throughout the city.....	400 00	
Josiah Conklin, services as assistant for engineer, relative to distribu- tion of water throughout the city,	30 62	
Edwin Smith, for copy of quantity of Russ pavement laid in Broad- way and Whitehall street.....	20 00	
	<hr/>	3,170 42
Office expenses.....		292 24
Postage and revenue stamps.....		85 99
Wagon hire.....		705 01
		<hr/>
		\$4,909 98
Unexpended balance.....		743 74
		<hr/>
Total.....		<u><u>\$5,653 72</u></u>

SCHEDULE No. 10.

CROTON WATER WORKS EXTENSION.

Requisitions drawn on the Comptroller.....\$91,977 48

EXPENDITURES.

Engineers New Reservoir.....	\$3,627 43
Four-foot pipes, Central Park.....	1,119 15
Gate Houses New Reservoir.....	17,603 11
High Bridge improvement.....	2,976 12
Inspectors New Reservoir.....	2,860 50
Labor, High Bridge improvement.....	7,693 28
Stationery.....	144 98
Miscellaneous Bills, Engineers.....	765 79
Miscellaneous Bills, General.....	1,301 07
Wagon hire.....	555 34
Sundry bills paid by the Comptroller, for advertising.....	157 55
Simon Stevens, (contract) granite for Gate Houses.....	3,128 02
Walker & Colman, (contract) for walk on Reservoir.....	4,500 00
Walker & Colman, (contract) for buildings over Gate Houses.....	112 97
Michael Kuhn, (contract) for iron railing around New Reservoir.....	9,000 00
W. E. Worthen, (contract) for roofs of Gate Houses.....	5,400 00
Francis Cobb, (contract) for statuary pedes- tals for Gate Houses.....	3,612 50
E. C. Sargent, (contract) for granite for ter- races of Gate Houses.....	8,437 93

Bigelow Blue Stone Co., (contract) for flag- ging terraces for Gate Houses.....	1,620 00
Blackledge & Banta, (contract) for building terraces for Gate Houses.....	2,191 50
Architectural Iron Works, (contract) for iron railing High Bridge.....	14,140 24
TOTAL.....	<u>\$91,977 48</u>

SCHEDULE No. 11.

SALARIES.

Appropriation by the Common Council for the year 1864.....	\$79,367 52
Unexpended balance from 1863.....	261 82
TOTAL.....	<u>\$79,629 34</u>

EXPENDITURES.

Thomas Stephens, President, January 1 to December 31.....	\$5,000 00
Robert L. Darragh, Assistant Commissioner, January 1 to December 31.....	5,000 00
Alfred W. Craven, Chief Engineer, January 1 to December 31, 1861.....	5,000 00
Henry L. Robertson, Clerk to Board, January 1 to December 31.....	2,000 00
Benj. S. Church, Assistant Engineer, January 1 to December 31.....	1,450 00
Alex. F. Dodge, Contract Clerk, January 1 to December 31.....	2,000 00
Thomas B. Tappen, Water Registrar, January 1 to December 31.....	3,500 00
William C. Rhodes, Assistant Water Registrar, January 1 to December 31.....	2,000 00
William H. King, Clerk to Water Registrar, January 1 to December 31.....	2,000 00
Gilbert H. White, Clerk to Water Registrar, January 1 to December 31.....	1,000 00
Everet W. Greene, Clerk to Water Registrar, January 1 to April 30.....	333 33

Jacob E. Howard, Clerk to Water Registrar, January 1 to December 31.....	1,000 00
James H. Clark, Clerk to Water Registrar, Jan- uary '1 to December 31.....	1,000 00
Daniel Strain, Clerk to Water Registrar, Jan- uary 1 to December 31.....	1,000 00
William B. Parsons, Clerk to Water Registrar, May 1 to December 31.....	666 67
John McCauley, Sewer Permit Clerk, January 1 to December 31.....	1,200 00
Thomas Stephens, as Accountant, January 1 to December 31.....	700 00
Aaron B. Rollins, Water Purveyor, January 1 to December 31	3,500 00
John Murdoch, Clerk to Water Purveyor, Jan- uary 1 to December 31.....	1,000 00
John Sigerson, Clerk to Water Purveyor, Jan- uary 1 to December 31.....	1,000 00
C. B. Woodruff, Inspector City Railroads, Jan- uary 1 to May 4.....	1,032 26
Harry Howard, Inspector of Vaults and Areas, January 1 to December 31.....	1,500 00
John J. Conklin, Messenger, January 1 to De- cember 31.....	1,000 00
Jacob H. Conklin, Messenger Engineer's Office, January 1 to December 31.....	900 00
Daniel Adamson, Supt. Croton dam, January 1 to December 31.....	850 00
James Scott, Supt. Sing Sing, January 1 to December 31.....	762 50
Barney See, Supt. Tarrytown, January 1 to December 31.....	743 75

James Bremner, Supt. Dobbs' Ferry, January 1 to December 31.....	743 75
James Berwick, Supt. Yonkers, January 1 to December 31.....	743 75
John L. Berrien, Supt. Fordham, January 1 to December 31.....	743 75
Jacob Moore, Supt. High Bridge, January 1 to December 31.....	743 75
Ralph Ellis, Supt. Receiving Reservoir, January 1 to December 31.....	895 00
Benjamin G. Roe, Supt. Distributing Reservoir, January 1 to December 31.....	895 00
William Ackerman, Water Police, January 1 to December 31.....	612 00
John W. V. Appleton, Water Police, January 1 to December 31.....	620 00
John W. Brady, Water Police, January 1 to October 15.....	492 00
Thomas Beatty, Water Police, January 1 to December 31.....	620 00
C. R. Brewster, Water Police, January 1 to December 31.....	614 00
Martin B. Brown, Water Police, January 1 to December 31.....	620 00
Patrick Callahan, Water Police, January 1 to December 31.....	620 00
William Coughlin, Water Police, January 1 to December 31.....	620 00
Samuel Cowan, Water Police, July 1 to October 31.....	206 00
Thos. J. Cavanagh, Water Police, December 5 to December 31.....	46 00

William Darragh, Water Police, June 1 to December 31.....	360 00
James Donovan, Water Police, January 1 to December 31.....	620 00
John J. Donovan, Water Police, July 19 to December 3.....	234 00
George W. Douglass, Water Police, January 1 to December 31.....	620 00
Terence Duffy, Water Police, March 1 to December 31.....	518 00
Thomas Farran, Water Police, January 1 to December 31.....	620 00
Charles J. Ferguson, Water Police, February 8 to August 22.....	330 00
John Gilchrist, Water Police, May 9 to December 31.....	400 00
T. G. Glaubenslee, Water Police, January 1 to May 31.....	260 00
William J. Hinch, Water Police, January 1 to December 31.....	620 00
George W. Jewett, Water Police, January 1 to February 2.....	56 00
William E. Jones, Water Police, January 1 to December 31.....	620 00
Jeremiah Kenefick, Water Police, February 4 to December 31.....	554 00
John Lynch, Water Police, February 1 to November 6.....	494 00
Joseph Lynch, Water Police, November 22 to December 31.....	66 00
John McMahon, Water Police, January 1 to December 31.....	606 00

Thomas McCoy, Water Police, January 1 to June 30.....	304 00
Thomas McCoy, Water Police, October 17 to December 31.....	100 00
Thomas McCarty, Water Police, January 1 to May 9.....	222 00
Francis McCormick, Water Police, January 1 to January 31.....	52 00
B. A. Mayereau, Water Police, January 1 to December 31.....	620 00
John M. Muller, Water Police, January 1 to February 3.....	58 00
James Meehan, Water Police, January 1 to December 31.....	620 00
Michael Madigan, Water Police, May 9 to December 31.....	398 00
John H. Munn, Water Police, May 9 to May 31.....	40 00
Owen Monaghan, Water Police, June 1 to December 31.....	360 00
John Moore, Water Police, January 1 to December 31.....	620 00
Bernard Moloney, Water Police, January 1 to January 31.....	52 00
John Mack, Water Police, January 1 to December 31.....	388 00
John Maguire, Water Police, January 1 to December 31.....	620 00
Felix McNally, Water Police, January 1 to May 7.....	220 00
Francis McAnna, Water Police, October 17 to December 31.....	128 00

William Piggott, Water Police, January 1 to December 31.....	620 00
Patrick Rigney, Water Police, January 1 to December 31.....	620 00
N. C. Robertson, Water Police, January 1 to December 31.....	620 00
William T. Ryer, Water Police, July 20 to December 31.....	278 00
Francis Stacom, Water Police, January 1 to December 31.....	620 00
James W. Smyth, Water Police, January 1 to May 7.....	220 00
Godfrey Sheehan, Water Police, February 1 to December 31.....	568 00
George Walsh, Water Police, January 1 to February 6.....	52 00
William White, Water Police, January 1 to November 5.....	574 00
Cornelius L. Wood, Water Police, January 1 to December 31.....	620 00
William Dealing, Keeper Fountain, Washing- ton Square January 1 to December 31....	120 00
	<hr/>
	\$73,665 51

BACK PAY, AS PER RESOLUTIONS OF THE
COMMON COUNCIL.

Robert L. Darragh, Assistant Commissioner, January 1 to December 31, 1863.....	\$2,000 00
Aaron B. Rollins, Water Purveyor, January 1 to December 31, 1863.....	1,000 00

Alexander F. Dodge, Contract Clerk, January 1 to December 31, 1863.....	800 00
William C. Rhodes, Water Registrar, January 1 to January 14, 1863.....	37 63
Thomas B. Tappen, Water Registrar, January 15 to December 31, 1863.....	962 37
John McCauley, Sewer Permit Clerk, Decem- ber 12 to December 31, 1863	64 52
John J. Conklin, Messenger, July 1 to Decem- ber 31, 1863.....	150 00
Jacob H. Conklin, Messenger Engineer's office, July 1 to December 31, 1863.....	150 00
	<hr/>
	\$78,830 03
Unexpended balance	799 31
	<hr/>
Total.....	<u><u>\$79,629 34</u></u>

SCHEDULE No. 12.

SEWERS—REPAIRING AND CLEANING.

Appropriation by the Common Council for the year 1864	\$35,000 00
Unexpended balance from 1863	10,888 08
	<hr/>
	\$45,888 08
	<hr/>

EXPENDITURES.

Cartage	\$2,166 50
Dumping sewer dirt	118 26
Manhole and basin covers	1,181 61
Repairing basins and culverts	4,386 25
Repairing manholes	819 99
Repairing sewers	2,561 68
Tools and repairing	28 24
Wagon hire	93 51
Workmen's wages—1st Company	7,753 25
do Inspectors on Basins	4,700 00
Holland & Foster, contractors, cleaning re- ceiving basins	20,000 00
	<hr/>
	\$43,809 29
Unexpended balance	2,078 79
	<hr/>
Total	\$45,888 08
	<hr/>

SCHEDULE No. 13.

SEWERAGE SYSTEM SURVEYS.

Appropriation by the Common Council for the year 1864.....	\$10,000 00
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EXPENDITURES.

Theodore Weston, services as Engineer, Feb- ruary 1 to December 31	\$1,460 00
C. H. Myers, services as Assistant, October 15, 1863, to December 31, 1864.....	1,032 50
Stationery	6 02
	<u>\$2,498 52</u>
Unexpended balance.....	7,501 48
Total	<u>\$10,000 00</u>

SCHEDULE No. 14.

STREETS—REPAVING AND REPAIRS.

Appropriation by the Common Council for the year 1864.....	\$100,000 00
Unexpended balance from 1863	1,160 03
	<hr/>
	<u>\$101,160 03</u>

EXPENDITURES.

Cartage	\$2,020 22
Crosswalks, New Chambers street	345 00
Sand	1,206 17
Tools and repairing	178 83
Wagon hire	1,041 35
Workmen's wages :	
1st Company.....	\$2,442 75
2d do	927 50
3d do	2,389 13
	<hr/>
	5,759 38
Inspectors on Pavements	5,602 00
Yard expenses	181 27
John L. Brown, contractor, repairing streets and avenues	51,708 34
	<hr/>
	\$68,042 56
Unexpended balance.....	33,117 47
	<hr/>
Total.....	<u>\$101,160 03</u>

SCHEDULE No. 15.

WATER PIPES AND LAYING.

Appropriation by the Common Council for the year 1864.....	\$173,000 00
Unexpended balance from 1863.....	9,221 67
	<hr/>
	<u>\$182,221 67</u>

EXPENDITURES.

Blasting.....	\$891 00
Brass cocks.....	877 92
Cartage.....	2,418 76
Casualties.....	22 00
Excavating trench, Broadway, Fifty-ninth to Seventieth street.....	280 75
Fire Hydrants.....	6,835 79
Fire Hydrants, repairing.....	773 52
Fuel.....	513 00
Hydrants and stop cock boxes.....	2,490 03
Iron pipes.....	50,413 15
Lead.....	9,716 14
Mason work.....	270 97
Miscellaneous bills.....	672 08
Oil.....	175 25
Proving sand.....	448 42
Public Hydrants, and repairing.....	584 13
Small Castings.....	9,724 21
Stationery.....	2,588 48
Stop-cocks.....	8,356 00
Repairing Fountains.....	493 50
Tapping pipes.....	1,146 00.

Tools and repairing.....	1,583 69
Water Meters.....	858 66
Yarn.....	779 78
Charles McMillen, examining engine and water meters, June 1 to July 31.....	202 12
E. A. Fuertes, examining engine and water meters, August 1, to December 31.....	500 00
Workmen's wages : /	
1st Company.....	\$7,047 50
2d "	8,152 50
3d "	8,493 00
4th "	29,326 19
5th "	6,352 75
6th "	5,257 75
	<hr/> 64,629 66
	<hr/> \$168,545 04
Unexpended balance.....	13,676 63
	<hr/>
Total.....	<u><u>\$182,221 67</u></u>

SCHEDULE No. 16.

WELLS AND PUMPS, AND REPAIRING.

Appropriation by the Common Council for the	
year 1864.....	\$2,500 00
Unexpended balance from 1863.....	281 02
	<hr/>
	\$2,781 02
	<hr/>

EXPENDITURES.

Building wells	\$203 75
Cleaning and repairing wells.....	232 72
Filling and covering wells.....	334 85
Repairing pumps.....	1,929 50
	<hr/>
	\$2,700 82
Unexpended balance.....	80 20
	<hr/>
Total.....	\$2,781 02
	<hr/>

SCHEDULE No. 17.

RUSS PAVEMENT IMPROVEMENT.

Unexpended balance from 1863.....	\$24,619 18
	<hr/>

EXPENDITURES.

Amount transferred to "City Contingencies,"	
by resolution of the "Common Council..."	\$15,000 00
Unexpended balance.....	9,619 18
	<hr/>
Total.....	\$24,619 18
	<hr/>

SCHEDULE No. 18.

BELGIAN PAVEMENTS.

Appropriation by the Common Council for

the year 1864.....	\$50,000 00
Unexpended balance from 1863.....	148,457 98
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	\$198,457 98
	<hr/>

EXPENDITURES.

Crosswalks Sixth avenue and Thirty-fourth and Thirty-fifth streets.....	\$1,366 12
Inspecting granite blocks.....	25 25
John L. Brown, contractor for granite blocks,	4,130 00
Portions payable by the Corporation for paving the following streets, viz. :	
Beaver street, Broadway and Pearl street..	5,341 15
Desbrosses street, from Washington to West street.....	877 55
Jay street, from Greenwich to Washington street.....	602 85
North Moore street, from Washington to West street.....	981 11
Ninth avenue, from Twenty-third to Thirty-fourth street.....	16,316 24
Eighth street, from Broadway to Sixth avenue.....	7,280 62
Seventeenth street, from Union square to First avenue.....	8,720 37
Twenty-first street, from Fifth to Sixth avenue.....	2,913 77
Thirty-second street, from Eighth to Ninth avenue.....	2,347 58

Forty-second street, from Fifth to Sixth avenue.....	\$3,399 01
Forty-seventh street, from Fifth to Sixth avenue.....	3,046 38
Fifty-fourth street, from Third to Sixth avenue.....	7,145 31
South street, from Oliver street to near Pier No. 35.....	2,092 03
	<hr/>
	\$67,185 34
Unexpended balance.....	131,267 64
	<hr/>
Total.....	<u>\$198,457 98</u>

SCHEDULE No. 19.

STREET IMPROVEMENT FUND.

Requisitions drawn on the Comptroller.....\$453,019 92

EXPENDITURES.

Advertising on Sewers and Pavements.....	\$1,048 58
Inspectors on Sewers.....	12,681 00
Printing on Sewers and Pavements.....	1,849 50
Sewer, Broadway, from Forty-ninth to Fiftieth street.....	32 70
Sewer, Cannon street, from Delancey to Rivington street.....	35 50
Sewer, Cannon street, from Stanton to Rivington street.....	36 70
Sewer, Clinton street, from Delancey to Rivington street.....	1,559 60
Sewer, Cornelia street, from Fourth to Bleecker street.....	25 80
Sewer, Corlears street, from Grand to East River.....	99 00
Sewer, Downing street, from Bleecker to Bedford street.....	36 00
Sewer, Essex street, from Rivington to Delancey street.....	45 90
Sewer, Grand street, from Greene to Mercer street.....	578 44
Sewer, Hudson street, from Hubert to Beach street.....	666 49
Sewer, Jones street, from Fourth to Bleecker street.....	41 40

Sewer, Laight street, from Hudson to Greenwich street.....	\$36 00
Sewer, Ludlow street, from Stanton to Houston street	36 00
Sewer, Ludlow street, from Stanton to Rivington street.....	36 30
Sewer, Leroy street, from Bleecker to Bedford street	35 50
Sewer, Montgomery street, from Madison to Henry street.....	1,425 48
Sewer, Monroe street, from Market to Pike street	3,267 40
Sewer, Morton street, from Washington to Hudson street.....	41 35
Sewer, Orchard street, from Broome to Grand street.....	28 00
Sewer, Orchard street, from Broome to Delancey street.....	31 50
Sewer, Orchard street, from Houston to Stanton street.....	2,429 45
Sewer, Suffolk street, from Delancey to Broome street.....	1,790 39
Sewer, Washington street from Horatio to Gansevoort street.....	705 38
Sewer, William street, from Pearl to Chambers street.....	34 50
Sewer, First avenue, from Fifteenth to Sixteenth street.....	20 60
Sewer, First avenue, from Fiftieth to Fifty-second street.....	1,806 00
Sewer, First avenue, from Fifty-eighth to Sixtieth street.....	4,849 21

Sewer, Third avenue, from Eighth street to 125 feet south.....	\$15 20
Sewer, Third avenue, from Ninth to Tenth street.....	25 00
Sewer, Third avenue, from Sixty-ninth to Seventy-third street.....	2,496 67
Sewer, Third avenue, from One Hundred and Eighteenth to One Hundred and Twenty-ninth street.....	12,413 60
Sewer, Fifth avenue, from Seventy-ninth to Eighty-ninth street.....	5,394 15
Sewer, Sixth avenue, from Fifty-fourth to Fifty-ninth street.....	109 05
Sewer, Seventh avenue, from Thirtieth to Thirty-first street.....	1,481 52
Sewer, Seventh avenue, from Thirty-third to Thirty-fourth street.....	19 20
Sewer, Eighth avenue, from Sixteenth to Seventeenth street.....	704 43
Sewer, Tenth avenue, from Thirtieth to Thirty-first street.....	129 05
Sewer, Tenth avenue, from Thirtieth to Thirty-fourth street.....	21 80
Sewer, Fourth street, from Bank to West Twelfth street.....	2,530 00
Sewer, Twenty-fifth street, from Eleventh avenue to Hudson River.....	2,174 91
Sewer, Thirty-eighth street, from Eighth to Ninth avenue.....	40 00
Sewer, Forty-second street, from Second to Third avenue.....	67 30
Sewer, Forty-third street, from Eleventh to Twelfth avenue.....	3,644 59

Sewer, Forty-sixth street, from Third to Fourth avenue.....	\$4,352 00
Sewer, Forty-seventh street, from Eleventh avenue to Hudson River.....	5,021 56
Sewer, Forty-eighth street, from Second avenue to East River.....	4,042 99
Sewer, Forty-ninth street, from Ninth avenue to and through Tenth avenue to Forty-seventh street.....	2,106 83
Sewer, Forty-ninth street, from Eighth to Ninth avenue.....	38 00
Sewer, Fiftieth street, from Third to Fourth av	21 70
Sewer, Fifty-second street from Fourth to Fifth avenue.....	4,978 80
Sewer, Fifty-second street, from Tenth avenue, to and through Eleventh avenue, to Fifty-first street.....	80 00
Sewer, Fifty-third street, from Third to Fourth avenue.....	1,444 70
Sewer, Fifty-third street, from Sixth to Seventh avenue.....	2,371 92
Sewer, Fifty-fourth street, from Eighth to Ninth avenue.....	4,471 20
Sewer, Fifty-sixth street, from Lexington avenue, and Fifty-ninth street from Third to Eight, avenue.....	25,210 90
Sewer, Fifty-sixth street, from First to Second avenue.....	34 50
Sewer, Fifty-seventh street, from Third to Lexington avenue.....	35 00
Sewer, Fifty-eighth street, from Second to Third avenue.....	59 70

Sewer, Fifty-ninth street, from Second to Third avenue.....	\$2,793 08
Sewer, Sixty-first street, from Second avenue to East River.....	8,553 58
Sewer, Seventieth street, from Hudson River, to and through Tenth avenue, to Seventy-fifth street.....	3,584 70
Sewer, Seventy-first street, from Third to Fourth avenue.....	148 42
Sewer, Seventy-third street, from Third to Fourth avenue.....	5,902 58
Sewer, Eighty-first street, from Second to Third avenue.....	38 00
Sewer, Eighty-seventh street, from Fourth avenue, to and through Third avenue, to Eighty-sixth street.....	3,168 34
Sewer, One Hundred and Twenty-ninth street, from Fifth to Sixth avenue.....	5,772 99
Sewer, One Hundred and Thirtieth street, from Bloomingdale Road to Hudson River..	3,820 47
Inspectors on Pavements.....	5,018 00
Paving Beaver street from Broadway to Pearl street.....	4,430 45
Paving Beekman street, from Park row to South street.....	332 25
Paving Broadway, from Twenty-third street to Fifty-ninth street.....	46,121 91
Paving Cedar street, from Pearl street to Hudson River.....	123 20
Paving Chambers street and James slip, from Chatham street to East River.....	6,255 01
Paving Catharine street, from Bowery to East River.....	90 00

Paving Desbrosses street, from Washington to West street.....	\$600 53
Paving East Broadway, from Chatham to Grand street.....	237 06
Paving Frankfort street, from Chatham to Pearl street.....	64 90
Paving Hammond street, from West street to Thirteenth avenue.....	25 00
Paving Houston street, from Bowery to avenue D.....	18,952 46
Paving Hudson street, from Chambers street to Eighth avenue.....	150 15
Paving Jay street, from Greenwich to Washington street.....	364 31
Paving Jay street, from Washington to West street.....	29 30
Paving Liberty street and Maiden lane, from Hudson River to East River.....	168 85
Paving Morris street, from Broadway to West street.....	40 00
Paving North Moore street, from Washington to West street.....	713 81
Paving Reade street, from Washington to West street.....	14 75
Paving Watts street, from Greenwich to West street.....	25 00
Paving Vestry street, from Canal street to Hudson River.....	70 95
Paving West street from Hammond to Gansevoort street,	244 16
Paving William street throughout.....	210 20
Paving Avenue C, from Sixteenth to Seventeenth street.....	12 20

Paving Second avenue, from Forty-second to Sixty-first street.....	\$74,658 72
Paving Third avenue, from Fifty-sixth to Eighty-sixth street.....	47,025 30
Paving Eighth avenue, from Forty-second to Fifty-ninth street.....	314 58
Paving Ninth avenue, from Fifty-fourth street to Broadway.....	10,209 85
Paving Ninth avenue, from Twenty-third to Thirty-fourth street.....	660 65
Paving Tenth avenue, from Fourteenth to Twenty-third street.....	144 48
Paving Eleventh avenue, from Forty-eighth to Fifty-third street.....	167 16
Paving Eighth street, from Broadway to Sixth avenue.....	335 50
Paving Sixteenth street, from avenue B to East River.....	86 80
Paving Seventeenth street, from Union square to First avenue.....	368 04
Paving Twenty-first street, from Fifth to Sixth avenue.....	143 20
Paving Twenty-second street, from Fifth to Sixth avenue.....	5,424 50
Paving Twenty-ninth street, from Fifth to Madison avenue.....	23 40
Paving Thirtieth street, from Second to Third avenue.....	32 50
Paving Thirty-first street, from Eighth to Ninth avenue.....	45 00
Paving Thirty-second street, from Sixth to Seventh avenue.....	42 00

Paving Thirty-second street, from Eighth to Ninth avenue.....	\$1,876 31
Paving Thirty-fourth street, from Fourth to Lexington avenue.....	116 00
Paving Thirty-fifth street, from Second to Third avenue.....	97 00
Paving Thirty-seventh street, from Third to Lexington avenue.....	23 50
Paving Thirty-ninth street, from Fourth to Madison avenue.....	71 30
Paving Thirty-ninth street, from Seventh to Eighth avenue.....	50 00
Paving Fortieth street, from Ninth to Tenth avenue.....	4,660 83
Paving Forty-first street, from Third to Fourth avenue.....	7,131 82
Paving Forty-first street, from Fifth to Madison avenue.....	23 40
Paving Forty-second street, from Eighth avenue to Hudson River.....	175 30
Paving Forty-second street, from Fifth to Sixth avenue.....	384 08
Paving Forty-third street, from Fifth to Sixth avenue.....	5,093 03
Paving Forty-fifth street, from Second to Third avenue.....	97 75
Paving Forty-fifth street, from Sixth to Ninth avenue.....	135 00
Paving Forty-fifth street, from Ninth to Tenth avenue.....	45 00
Paving Forty-sixth street, from Eleventh to Twelfth avenue.....	28 50

Paving Forty-seventh street, from First to Third avenue.....	\$243 10
Paving Forty-seventh street, from Third avenue to East River.....	6,992 89
Paving Forty-eighth street, from Second avenue to East River.....	1,076 95
Paving Forty-eighth street, from Eighth to Ninth avenue.....	45 00
Paving Forty-ninth street, from Third avenue to East River.....	342 40
Paving Forty-ninth street, from Sixth avenue to Lexington avenue.....	5,011 41
Paving Forty-ninth street, from Tenth avenue to Hudson River.....	3,994 63
Paving Fifty-second street, from Third to Fourth avenue	5,913 03
Paving Fifty-third street, from Third to Fourth avenue.....	4,148 42
Paving Fifty-fourth street, from Second to Third avenue	104 95
Paving Fifty-fourth street, from Third to Sixth avenue	480 75
Paving Fifty-seventh street, from Eighth avenue to Hudson River.....	148 00
Paving Fifty-eighth street, from Second to Third avenue	5,236 78
Paving Fifty-ninth street, from Second to Third avenue.....	32 50
Crosswalks, avenue A and Second avenue, at One Hundred and Tenth, One Hundred and Fourteenth, One Hundred and Sixteenth, One Hundred and Seventeenth, and One Hundred and Eighteenth streets	5,698 03

Crosswalks, First avenue, from Fifty-third to Sixty-first street	\$7,131 89
Crosswalks, Third avenue, from One Hundred and Sixth to One Hundred and Ninth streets.	2,080 58
Crosswalks, opposite No. 23 Cherry street.	63 09
Crosswalks, Nassau street, opposite the Post- office	59 81
Receiving-basin north-east corner of Varick and Downing streets.	14 31
Receiving-basin south-west corner of Irving Place and Seventeenth street.	217 42
Receiving-basin, north-west corner of Ir- ving Place and Seventeenth street.	198 72
Receiving-basin, south-west corner of Grand and Chrystie streets.	240 48
Receiving-basin, south-east corner of Allen and Houston streets.	260 43
Receiving-basin, south-east corner of Bow- ery and Third street.	261 46
Receiving-basin, north-east corner of Lexing- ton avenue and Thirty-fourth streets,	16 14
Receiving-basin, north-east corner of Broad- way and Twenty-fifth street.	262 53

\$448,888 80

Bills presented and not yet audited by the
Finance Department :

Surveys, Sewers, Broadway, Twenty-first to Twenty-second street.	53 06
Surveys, Sewer, Morton street, Hudson to Washington street.	80 55

Surveys, Sewer, Thirty-eighth street, Second avenue to East River.....	\$195 42
Surveys, Sewer, Forty-third street, Eleventh to Twelfth avenue.....	156 48
Surveys, Sewer, Forty-eighth street, Second avenue to East River.....	164 91
Sewer, Fortieth street, Eighth and Ninth avenues, from Tenth avenue, to Thirty-fifth street	361 30
Surveys, paving Broadway, Twenty-third to Fifty-ninth street.....	1,518 60
Surveys, paving Broadway, Twenty-third to Fifty-ninth street.....	533 36
Surveys, paving Gramercy park, Twentieth to Twenty-first street.....	55 68
Surveys, paving Twenty-second street, Fifth to Sixth avenue.....	142 73
Surveys, paving Thirty-second street, Sixth to Seventh avenue	126 69
Surveys, paving Thirty-eighth street, Second avenue to East River.....	50 60
Surveys, paving Forty-third street, Fifth to Sixth avenue	143 53
Surveys, paving Forty-eighth street, Second to Third avenue.....	118 81
Surveys, paving Forty-eighth street, Eighth to Ninth avenue.....	113 16
Surveys, paving Forty-ninth street, Ninth to Tenth avenue	42 00
Surveys, crosswalks, Sixth avenue, Forty-seventh to Fifty-seventh street.....	284 24
Total.....	<u><u>\$453,019 92</u></u>

SCHEDULE No. 20.

EXHIBITING LEDGER BALANCE, DECEMBER 31, 1864.

HEADS OF ACCOUNTS.	DR.	CR.
The Mayor, Aldermen, and Commonalty	\$230,505 44	
Aqueduct repairs and improvements		\$27,484 88
Belgian pavement		131,272 64
Croton water works extension ...		
Contingencies, Croton Aqueduct Board		743 74.
Russ pavement improvement		9,619 18
Requisitions on special and trust accounts		4,131 12
Requisitions on city accounts		
Salaries		799 31
Sewers, repairing and cleaning ..		2,078 79
Sewerage system surveys		7,101 48
Streets, repaving and repairs		33,117 47
Street improvement fund		
Water pipes and laying		13,676 63
Wells and pumps, and repairing ..		80 20
Water rents		895,612 72
Water rents, penalties thereon ..		11,621 55
Permits for taps in water pipes ..		2,779 00
Permit for sewer connections		15,375 00
Permits to construct vaults		19,686 79
Petty cash		770 73
City Chamberlain	945,845 79	
	<u>\$1,176,351 23</u>	<u>\$1,176,351 23</u>

SCHEDULE No. 21.

The following table exhibits the Yearly Revenue derived from Croton Water, as collected by the Department, from its introduction into the city in 1842, with the annual increase or decrease thereof to date.

TIME.	RECEIPTS.	INCREASE.	DECREASE.
Oct. 5, '42 to May 1, '43..	\$32,053 74	.....	....
May 1, '43 " 1, '44..	84,444 68	\$52,890 94	....
" 1, '44 " 1, '45..	117,277 86	32,833 18	....
" 1, '45 " 1, '46..	163,900 52	46,622 66	....
" 1, '46 " 1, '47..	193,346 24	29,445 72	....
" 1, '47 " 1, '48..	219,416 72	26,070 48	....
" 1, '48 " 1, '49..	250,081 51	30,664 79	....
" 1, '49 to Dec. 31, '49..	259,532 97	*9,451 46	....
Jan. 1, '50 " 31, '50..	458,951 87	†199,418 90	....
" 1, '51 " 31, '51..	458,789 78	.....	\$162 09†
" 1, '52 " 31, '52..	533,965 16	75,175 38	....
" 1, '53 " 31, '53..	579,956 30	45,991 14	....
" 1, '54 " 31, '54..	608,966 15	29,009 85	....
" 1, '55 " 31, '55..	674,736 42	* 65,770 27	....
" 1, '56 " 31, '56..	662,949 57	.....	11,786 85
" 1, '57 " 31, '57..	697,370 51	34,420 94	....
" 1, '58 " 31, '58..	730,107 98	32,737 47	....
" 1, '59 " 31, '59..	759,250 45	29,142 47	....
" 1, '60 " 31, '60..	767,169 62	7,919 17	....
" 1, '61 " 31, '61..	765,954 35	.....	1,215 27
" 1, '62 " 31, '62..	783,234 60	17,280 25	
" 1, '63 " 31, '63..	880,958 90	97,724 30	
" 1, '64 " 31, '64..	907,234 27	26,275 37	
TOTAL.....	\$11,589,650 17	.	

* Eight months.

† Under the operation of the Laws of 1849.

‡ A reduction in the rents, equal to about 10 per cent. was made this year.

SCHEDULE No. 22.

The following table exhibits the yearly revenue derived from permits to connect premises with the public sewers, as collected by this Department; also, the yearly expenditures for cleaning, repairing, and rebuilding the sewers and their appurtenances.

TIME.	RECEIPTS.	EXPENDIT'S.	EXCESS OF RECEIPTS.	EXCESS OF EXPENDIT'S.
Feb. 5, 1846, to Dec. 31, 1846	\$4,852 50	\$4,404 17	\$448 33	
Jan. 1, 1847, " 31, 1847	7,470 00	4,753 01	716 99	
" 1, 1848, " 31, 1848	8,585 00	4,673 05	3,911 95	
" 1, 1849, " 31, 1849	11,759 50	9,936 35	1,823 25	
" 1, 1850, " 31, 1850	18,977 00	8,118 97	10,858 03	
" 1, 1851, " 31, 1851	21,885 50	11,230 78	10,604 72	
" 1, 1852, " 31, 1852	28,132 50	12,554 66	15,577 84	
" 1, 1853, " 31, 1853	29,353 00	14,262 05	15,090 95	
" 1, 1854, " 31, 1854	26,247 00	12,402 51	13,844 49	
" 1, 1855, " 31, 1855	7,251 20	16,179 45	11,071 75	
" 1, 1856, " 31, 1856	24,122 00	20,765 94	3,356 06	
" 1, 1857, " 31, 1857	21,425 50	19,827 94	1,597 56	
" 1, 1858, " 31, 1858	18,561 50	24,418 35	.....	\$5,856 85
" 1, 1859, " 31, 1859	21,723 00	31,081 00	.....	9,358 00
" 1, 1860, " 31, 1860	24,391 00	45,921 05	.....	21,530 05
" 1, 1861, " 31, 1861	15,981 00	38,336 50	.....	22,355 50
" 1, 1862, " 31, 1862	14,193 00	27,384 04	.....	13,191 04
" 1, 1863, " 31, 1863	16,169 00	59,261 98	.....	43,092 98
" 1, 1864, " 31, 1864	15,375 00	43,809 29	.....	28,434 29
	\$356,404 20	\$409,320 99	\$90,901 92	\$143,818 61
Total excess of expenditures over receipts.....				<u>\$52,916 69</u>

SCHEDULE No. 23.

LOCALITIES OF NEW LINES OF MAIN WATER-PIPES.

Six-inch Mains.

	FEET.
Ninety-third street, from Third avenue 200 ft. East.....	200
One Hundred and Fifth street, from Third avenue 300 ft. East.....	300
Sixtieth street, from Second avenue 325 ft. East, Fourteenth street, from 100 ft. East, to 626 ft. East of Avenue C.....	325
Fourth avenue, from Ninetieth to Ninety-first street.....	526
Sixty-sixth street, from Second avenue 465 ft. East.....	200
Sixty-second street, from Second avenue 400 ft. East.....	465
Forty-fifth street, from Lexington to Fourth avenue.....	400
One Hundred and Twenty-third street, from 200 ft. to 456 feet East of First avenue	408
One Hundred and Seventeenth street, from avenue A to the East River	256
Horatio street, from 276 ft. West of West street, to Thirteenth avenue.....	640
Forty-sixth street, from 100 ft. West of Lexington avenue to Fourth avenue.....	136
Forty-ninth street, from Eleventh avenue 300 ft. East.....	320
Fortieth street, from Madison to Fourth avenue..	300
Sixtieth street, from Third to Lexington avenue,	450
One Hundred and Twenty-fourth street, from Fourth to Fifth avenue	450
	792

	FEET.
Forty-fourth street, from 200 ft. East of Fifth avenue to Fourth avenue	736
Seventy-third street, from Fourth avenue 175 ft. East	175
Fifty-second street, from Sixth avenue 250 ft. East	250
Forty-ninth street, from Sixth avenue 180 ft. East	180
Seventy-ninth street, from Fourth avenue 300 ft. West	300
Fifty-second street, from Fifth to Sixth avenue..	900
Thirty-eighth street, from Fourth to Sixth avenue,	1,810
Nineteenth street, from avenue A to avenue B...	820
Twenty-fifth street, from Eleventh avenue 225 ft. East	225
Eighteenth street, from Avenue B to Avenue C..	650
Fifty-third street, from Fifth to Sixth avenue....	700
Fifth avenue, from Fifty-fifth to Fifty-seventh street	490
One Hundred and Seventeenth street, from Third to Fourth avenue	720
Sixtieth street, from 250 ft. East of Ninth ave- nue to Tenth avenue	550
Fifty-fifth street, from Tenth avenue 325 ft. West,	325
	<hr/>
	14,999
	<hr/>

Twelve-inch Mains.

	FEET.
First avenue, from Forty-eighth to Fifty-third street.....	1,300
First avenue, from Forty-sixth to Forty-ninth street.....	780
Tenth avenue, from Fifty-fourth to Fifty-fifth street.....	200
Ninth avenue, from Fifty-fourth to Fifty-sixth street.....	520
Second avenue, from Eighty-fourth to Eighty-fifth street.....	260
Seventy-first street, from Eighth to Tenth avenue,	1,820
	<hr/>
	4,880
	<hr/>

Sixteen-inch Mains.

Madison avenue, from Thirty-fourth to Forty-second street.....	2,080
	<hr/>

RECAPITULATION.

Of six-inch mains.....	14,999	lineal feet.
Of twelve-inch mains	4,880	do.
Of sixteen-inch mains	2,080	do.

Total..... 21,959 lineal feet,

Or four miles 839 lineal feet.

SCHEDULE No. 24

Hydrants Put Down during the Year 1864.

Greenwich and Liberty streets.
 Renwick street, between Canal and Spring streets.
 Dutch street, between Fulton and John streets.
 Greenwich street, between Jay and Harrison streets.
 Gouverneur slip and Front street.
 William street, between Chambers and Pearl streets.
 Leonard street, near Elm street.
 Willett and Houston streets.
 Second street, near avenue D.
 Attorney street, corner Houston street.
 East Broadway, between Market and Catharine streets.
 Goerck street, between Rivington and Stanton streets.
 Mangin street, between Rivington and Stanton streets.
 State street, near Pearl street.
 Park street, corner Little Water street.
 West street, between Watts and Hoboken streets.
 Watts street, corner West street.
 Clinton street, corner Front street.
 Bridge street, corner Whitehall street.
 Mott street, corner Canal street.
 Broome street, corner Tompkins street.
 Fifth avenue, between Fifty-fourth and Fifty-fifth streets.
 Gansevoort street, corner West street.
 Fifteenth street, near Seventh avenue.
 Fourteenth street, between Sixth and Seventh avenues.
 Thirteenth street, near Fourth avenue.
 Fifth street, between avenue C and D.
 Fifteenth street, between Sixth and Seventh avenues.
 Twenty-first street, between avenue A and B.
 Seventeenth street, between Broadway and Fourth
 avenue.

Fifteenth street, between Sixth and Seventh avenues.

Fifth avenue, between Thirty-sixth and Thirty-seventh streets.

One Hundred and Eighteenth street, between avenue A and East River.

Forty-third street, between Eleventh and Twelfth avenues.

Twenty-sixth street, between Seventh and Eighth avenues.

Twenty-ninth street, corner Seventh avenue.

Twenty-ninth street, between Sixth and Seventh avenues.

Seventh street, corner East River.

Sixth street, corner Lewis street.

Fifth street, east of Lewis street.

Thirteenth street, between Tenth and Eleventh avenues.

Seventeenth street, between Ninth and Tenth avenues.

Thirty-fifth street, between Ninth and Tenth avenues.

Fifty-first street, between Lexington and Third avenues.

Third avenue, between One Hundred and Fourth and One Hundred and Fifth streets.

Third avenue, between One Hundred and Fifth and One Hundred and Sixth streets.

Sixth street, corner avenue C.

Fourteenth street, between First and Second avenues.

Forty-second street, between Eleventh and Twelfth avenues.

One Hundred and Twenty-first street, between avenue A and East River.

Fifty-third street and East River.

Eighty-fifth street, between Third and Fourth avenues.

Sixty-first street, between avenue A and First avenue.

Bank street, corner Thirteenth avenue.

Eighteenth street, corner avenue C.

Thirty-third street, between Ninth and Tenth avenues.

Twentieth street, between Eleventh and Twelfth avenues.

Forty-third street, between Tenth and Eleventh avenues.

SCHEDULE No. 25.

Pipes of all Sizes, laid for the Supply and Distribution of Croton Water, to December 31, 1864.

TIME.	48.	36.	30.	24.	20.	16.	12.	10.	6.	4.	TOTALS.
Prev's to July, 1849	60,888	25,796	5,400	20,275	18,125	225,140	5,875	668,107	9,402	7,451	1,024,051 ft., or 198 miles 5,011 ft.
July to Dec'r, 1850	.....	.....	.....	.....	953	2,480	.....	.....	80,539	869	20,236 "
Jan'y to Dec'r, 1851	.....	545	2,040	4,860	.....	2,375	.....	.....	42,817	923	41,328 "
" " " 1852	.....	.....	.....	8,650	.....	18,789	.....	.....	47,714	.....	65,199 "
" " " 1853	.....	.....	.....	.....	.....	12,171	.....	.....	24,161	.....	63,535 "
" " " 1854	8,500	5,125	.....	.....	.....	996	.....	.....	23,223	.....	88,782 "
" " " 1855	587	.....	.....	1,765	.....	5,000	.....	.....	18,784	.....	80,575 "
" " " 1856	.....	10,682	.....	1,492	.....	6,063	.....	.....	25,702	129	86,921 "
" " " 1857	.....	1,319	.....	102	.....	2,731	.....	.....	20,181	.....	29,983 "
" " " 1858	.....	.....	.....	.....	900	8,089	.....	.....	11,150	.....	23,220 "
" " " 1859	.....	.....	.....	6,460	.....	1,040	.....	.....	19,560	.....	19,560 "
" " " 1860	.....	.....	.....	.....	.....	3,008	.....	.....	18,741	.....	8,153 "
" " " 1861	.....	.....	.....	.....	.....	6,602	.....	.....	26,331	.....	82,933 "
" " " 1862	.....	.....	.....	.....	.....	5,205	.....	.....	84,567	.....	89,772 "
" " " 1863	.....	.....	.....	.....	.....	8,610	.....	.....	21,718	.....	25,323 "
" " " 1864	.....	.....	.....	.....	.....	7,500	.....	.....	20,986	.....	23,546 "
" " " 1864	.....	.....	.....	.....	.....	4,880	.....	.....	14,999	.....	21,959 "
	4,087	60,878	44,862	5,400	41,324	17,058	310,639	5,875	1,056,059	9,472	1,555,654 ft., or 294 miles 3,334 ft.

The present Department was organized in July, 1859. The first line in the table gives the quantity in use at that time; the others, the quantities laid each year since. The figures at the head of the columns indicate the internal diameter of the pipes, in inches.

SCHEDULE No. 26.

BLOCK PAVEMENTS.

Contracts were made during the year 1864 for the construction of Block Pavements in the following streets and avenues :

STREET.	BETWEEN	CONTRACTOR.	NUMBER OF SQUARE YARDS.	PRICE PER SQUARE YARD.	PROPORTION OF COST BORNE BY CITY.
Second avenue..	42d and 61st street.....	C. Guidet.....	23,350	\$2 71	none.
Forty first st....	3d and 4th avenues.....	Wm. Humes.....	2,656	2 47	none.
*Third avenue..	56th and 86th streets.....	Jardine & Johnson.	39,926	2 49	none.
Twenty-second st	Fifth and Sixth avenues.....	do.	3,153	2 56	$\frac{1}{2}$
Fortieth street..	Ninth and Tenth avenues.....	W. A. Cumming...	2,510	2 56	$\frac{1}{2}$
Fifty-eighth st..	Second and Third avenues.....	J. L. Brown.....	2,101	2 50	none.
Houston street..	Avenue D and Bowery.....	C. Keyes.....	11,681	2 17	$\frac{1}{2}$
Forty-third st...	Fifth and Sixth avenues.....	A. J. Dunn.....	3,159	2 25	$\frac{1}{2}$
Forty-eighth st..	Eighth and Ninth avenues.....	W. A. Cumming...	2,504	2 38	$\frac{1}{2}$
Thirty-second st.	Second and Third avenues.....	do.	2,090	2 44	$\frac{1}{2}$
William street..	John and Fulton streets.....	J. W. Pettigrow...	766	2 25	$\frac{1}{2}$
*East Broadway.	Grand and Chatham streets..	C. Keyes.....	10,250	2 19	$\frac{1}{2}$
Forty-first street.	Fifth and Madison avenues....	do.	1,384	2 38	$\frac{1}{2}$
Thirty-first street.	Sixth and Seventh avenues....	do.	2,504	2 39	$\frac{1}{2}$
Gramercy Park.	East side of 20th and 21st sts.	do.	590	2 39	$\frac{1}{2}$
Centre street....	Intersection of Reade street, } (gore, west side)..... }	do.	184	2 60	none.
†South street....	Oliver, to near Market street...	do.	2,270	86	all.
*Ninth avenue..	54th street and Broadway.....	Thos. Gearty.....	16,600	2 15	none.
*Fifty-seventh st	Eighth and Eleventh avenues...	Jardine & Johnson.	16,456	2 17	none.
Sixtieth street...	Broadway, across Ninth av.	Thos. Gearty.....	2,122	2 16	none.
†Sixtieth street.	Lexington and Third avenues...	C. Keyes.....	1,450		none.
†Sixteenth street	Fifth and Sixth avenues.....	C. Guidet.....	3,100		none.
†West street....	Hoboken and Watts streets....	M. Murray.....	2,047		none.
Total square yards.....			152,853		

* Contracts uncompleted. † At private expense.

AND FOR CROSSWALKS ON

Second Avenue, from Sixty-first street to Seventy-ninth street, Chas. Guidet, Contractor.

Sixth avenue, east side, from Forty-seventh street to Fifty-seventh street, W. A. Cumming, Contractor.

Avenue A, at One Hundred and Sixteenth street, Craw & Seaman, Contractors.

First avenue, at One Hundred and Fourteenth, One Hundred and Sixteenth, and One Hundred and Seventeenth streets; Craw & Seaman, Contractors.

Second avenue, at One Hundred and Tenth, One Hundred and Fourteenth, One Hundred and Sixteenth, One Hundred and Seventeenth, and One Hundred and Nineteenth Streets, Craw & Seaman, Contractors.

First avenue, from Fifty-third street to Sixty-first street, Jas. Cunningham, Contractor.

Nassau street, opposite ladies' entrance to Post-office, P. Lynch, Contractor.

West street, from No. 85 to Marine Chapel, Jardine & Johnson, Contractors.

SCHEDULE No. 27.

BLOCK PAVEMENTS.

The following STATEMENT exhibits the locality and extent of all Block Pavements now laid, with the year in which the same were respectively commenced. Those dated prior to 1857 were not laid under the supervision of this department.

DATE.	LOCALITY.	BETWEEN.
1859.	Avenue D.....	Houston and Eleventh street.
1864.	Second avenue.....	Forty-second and Fifty-first streets.
1856.	Third avenue.....	Forty-fourth and Fifty-sixth streets.
1864.	" ".....	Fifty-sixth and Eighty-sixth streets.
1861.	Fourth avenue.....	Seventeenth and Thirty-second streets.
1859.	" ".....	Thirty-fourth and Thirty-eighth streets.
"	Fifth avenue.....	Washington square and Forty-second st.
1862.	" ".....	Forty-second and Forty-ninth streets.
"	" ".....	Forty-ninth and Sixty-first streets.
1858.	Sixth avenue.....	Carmine and Forty-second streets.
"	Eighth avenue.....	Hudson and Forty-second streets.
1863.	Ninth avenue.....	Twenty-third and Thirty-fourth streets.
1859.	" ".....	Forty-fifth and Fifty-third streets.
1864.	" ".....	Fifty-fourth street and Broadway.
1856.	Lexington avenue....	Thirty-fourth and Forty-second streets.
1861.	" ".....	Forty-second and Fifty-seventh streets.
1857.	Madison avenue.....	Twenty-third and Forty-second streets.
1858.	Astor place.....	Third and Fourth avenues.
1860.	Amity street.....	Broadway and Sixth avenue.
1859.	Battery place.....	Broadway and North River.
1863.	Beekman street.....	Park Row and South street.
"	Beaver street.....	Broadway and Pearl street.
1861.	Bleecker street.....	Broadway and Eighth avenue.
1852.	Bowery.....	Walker and Bayard streets.
1856.	".....	Chatham square and Union square.
1857.	Bowery (New).....	Chatham square and Franklin square.
1849.	Broadway.....	Battery and Franklin street (Russ).
1853.	".....	Canal and Franklin streets.
1849.	".....	Canal and Fourteenth streets (Russ)
1862.	".....	Seventeenth and Twenty-third streets.
1863.	".....	Twenty-third and Fifty-ninth streets.
1856.	Canal street.....	East Broadway and Centre street.
1862.	" ".....	Centre street and Broadway.
1864.	Centre street.....	Gore at Reade street.

DATE.	LOCALITY.	BETWEEN.
1858.	Columbia street.....	Grand and Houston streets.
1862.	Courtlandt street.....	Greenwich and West streets.
1860.	Chambers street.....	Chatham street and Hudson River.
1862.	“ “	Chatham street and James' slip.
1856.	Chatham street.....	Spruce street and Bowery.
1863.	Desbrosses street.....	Washington and West streets.
1859.	Duane street.....	Chatham street and City Hall place.
1860.	“ “	Broadway and Centre streets.
1862.	“ “	Centre street and City Hall place.
“	Elm street.....	Reade and Duane streets.
1864.	East Broadway.....	Grand and Chatham streets.
1856.	Fulton street.....	East and North River.
1864.	Gramercy park.....	East side Twentieth and Twenty-first st.
1855.	Greenwich street.....	Courtlandt and Barclay streets.
1856.	“ “	Murray and Jay streets.
1860.	“ “	Battery and Gansevoort place.
1853.	Grand street.....	East River and Broadway.
1864.	Houston street.....	Avenue D and Bowery.
1862.	James slip.	Chambers and South streets.
1863.	Jay street	Greenwich and Washington streets.
1862.	Pearl street.....	Peck slip and Fulton street.
1855.	Perry street.....	Greenwich avenue and Waverley place.
1856.	Park place.....	College place and Church street.
“	Park Row	Broadway and Chatham street (Russ.)
1860.	Manhattan alley.....	Reade and Elm streets.
1863.	North Moore street....	Washington and West streets.
1860.	Reade street.....	Broadway and Washington street.
“	“ “	Broadway and City Hall place.
1861.	Rutherford place.....	Sixteenth and Seventeenth streets.
1860.	State street.....	Battery place and Whitehall street.
1862.	South street.....	Whitehall and Oliver streets.
1864.	South street.....	Oliver and New Market streets.
1862.	University place.....	Eleventh and Thirteenth streets.
1859.	Wall street.....	Broadway and East River.
1863.	William street.	Beaver and Exchange place.
1864.	William street.....	John and Fulton streets.
1860.	Whitehall street.....	Broadway and State street.
1861.	Washington street....	Liberty and Spring streets.
1862.	West street.....	Liberty and Courtlandt streets.
1864.	“ “	Hoboken and Watts streets.
1862.	Worth street.....	Broadway and Hudson street.
1859.	Eighth street.....	First and Third avenues.
1863.	Eighth street.	Broadway and Sixth avenue.
1860.	Tenth street.....	Fourth avenue and East River.
1861.	“ “	Fifth and Sixth avenues.

DATE.	LOCALITY.	BETWEEN.
1862.	Eleventh street.....	Broadway and University place.
"	Thirteenth street.....	Fifth avenue and University place.
1864.	Sixteenth street.....	Fifth and Sixth avenues.
1863.	Seventeenth street.....	Union square and First avenue.
1859.	Eighteenth street.....	Broadway and Sixth avenue.
"	Twentieth street.....	Fifth and Sixth avenues.
1861.	" ".....	Broadway and Fifth avenue.
1863.	Twenty-first street.....	Fifth and Sixth avenues.
1864.	Twenty-second street..	Fifth and Sixth avenues.
1862.	Twenty-third street...	Third avenue & 400 feet west Tenth av.
1861.	Twenty-sixth street....	Sixth and Madison avenues.
1860.	Twenty-eighth street...	Eighth and Ninth avenues.
1861.	Thirty-first street.....	Sixth and Seventh avenues.
1864.	Thirty-second street...	Second and Third avenues.
1866.	" ".....	Broadway and Fifth avenue.
1864.	" ".....	Sixth and Seventh avenues.
1863.	" ".....	Eighth and Ninth avenues.
1859.	Thirty-fourth street...	Fifth and Sixth avenues.
1860.	" ".....	Fourth and Ninth avenues.
1863.	" ".....	Lexington and Third avenues.
1860.	Thirty-fifth street....	Fourth and Lexington avenues.
1863.	" ".....	Second and Third avenues.
1859.	Thirty-sixth street....	Fifth and Sixth avenues.
1861.	" ".....	Park and Lexington avenues.
1859.	Thirty-seventh street..	Fifth and Sixth avenues.
"	" ".....	Lexington and Fourth avenues.
1862.	" ".....	Madison and Fifth avenues.
1861.	Thirty-eighth street...	Fourth and Eighth avenue.
1863.	Thirty-ninth street....	Madison and Fourth avenue.
1859.	" ".....	Second and Third avenues.
1860.	Fortieth street.....	Second and Third avenues.
1864.	" ".....	Ninth and Tenth avenues.
1864.	Forty-first street.....	Third and Fourth avenues.
1864.	" ".....	Fifth and Madison avenues.
1863.	Forty second street...	Fifth and Sixth avenues.
1859.	" ".....	Sixth and Seventh avenues.
1860.	" ".....	Eighth avenue and Broadway.
1864.	Forty-third street....	Fifth and Sixth avenues.
1859.	" ".....	Seventh and Eighth avenues.
1861.	" ".....	Ninth and Tenth avenues.
1859.	Forty-fourth street...	Sixth avenue and Broadway.
1860.	" ".....	Ninth and Tenth avenues.
1863.	Forty-fifth street....	Second and and Third avenues.
1860.	" ".....	Third and Lexington avenues.
"	" ".....	Fifth and Sixth avenues.

DATE.	LOCALITY.	BETWEEN.
1859.	Forty-sixth street.....	Fifth and Sixth avenues.
1863.	Forty-seventh street...	Third and First avenues.
"	" "	Fifth and Sixth avenues.
1862.	" "	Sixth and Seventh avenues.
1863.	Forty-eighth street....	Second and Third avenues.
1859.	" "	Sixth and Seventh avenues.
1860.	" "	Broadway and Eighth avenue.
1864.	" "	Eighth and Ninth avenues.
1859.	Forty-ninth street....	Third and Lexington avenues.
1863.	" "	Lexington and Sixth avenues.
"	" "	Third avenue and East River.
1861.	Fiftieth street.....	Second and Third avenues.
1862.	" "	First and Second avenues.
1859.	Fifty-first street.....	Second and Fourth avenues.
"	Fifty-second street....	Second and Third avenues.
1863.	" "	Third and Fourth avenues.
"	Fifty-third street.....	Third and Fourth avenues.
1859.	" "	Broadway and Eighth avenue.
1861.	" "	Second and Third avenues.
1863.	Fifty-fourth street....	Third and Sixth avenues.
"	" "	Second and Third avenues.
1861.	Fifty-fifth street	First and Third avenues.
1864.	Fifty-seventh street...	Eighth and Eleventh avenues.
"	Fifty-eighth street....	Second and Third avenues.
"	Sixtieth street.....	Third and Lexington avenues.
"	" "	Broadway across Ninth avenue.

SCHEDULE No. 28.

BLOCK PAVEMENT.

Showing the Ordinances received and not acted upon, with an estimate of the number of square yards, and of the proportion of cost which in pursuance of said Ordinances is to be borne by the city at large :

STREET.	BETWEEN	ESTIMATED NUMBER OF SQUARE YARDS.	PROPORTION OF COST TO BE BORNE BY CITY.	Amount.
			Ratio.	
Canal street.....	Broadway and West street (expense to be borne by Railway Companies, City and owners).....	22,350		\$28,000
Centre street.....	Chambers and Broome street.....	14,200	all	35,500
South street.....	Market and Corlears street.....	27,500	"	64,750
Twenty-third street.....	Third avenue and East River.....	11,125	"	27,750
Thirty-first street.....	Fifth and Madison avenues.....	1,378	1/2	2,000
Twenty-ninth street.....	Fifth avenue and Broadway.....	1,400	1/2	2,500
Broome street.....	Broadway and Bowery.....	6,200	all	15,500
Ninth avenue.....	Fourteenth to Twenty-third street, Thirty-fourth to Forty-second street, Eighth avenue and Chambers street (exc. tracks).....	31,800	all	79,500
Hudson street.....	Fourth and Sixth avenues.....	24,918	all	62,250
Thirty-ninth street.....	Fifth and Sixth avenues.....	3,100	1/2	3,850
Lafayette place.....	Great Jones and Eighth streets.....	4,632	1/2	5,750
Ninth street.....	Broadway and Sixth avenue.....	6,962	1/2	8,750
Fifteenth street.....	Union square and First avenue.....	7,500	1/2	9,250
Forty-ninth street.....	Broadway and Eighth avenue.....	1,700	1/2	2,250
Nineteenth street.....	Sixth and Tenth avenues.....	10,300	1/2	13,000
Thirty-first street.....	Fifth and Sixth avenues.....	2,806	1/2	3,550
Fifteenth street.....	Fifth and Ninth avenues.....	11,900	1/2	14,600
Second street.....	Avenue D and Bowery.....	18,992	1/2	17,500
Catharine street.....	South and Chatham streets.....	5,000	1/2	6,250
Fourteenth street.....	Union place and Tenth avenue.....	22,700	1/2	28,500
Vestry street.....	Canal and West streets.....	4,505	1/2	5,600
Tenth avenue.....	Fourteenth and Twenty-third streets.....	13,702	1/2	17,000
Forty-ninth street.....	Ninth and Tenth avenues.....	2,720	1/2	3,250
Reade street.....	Washington and West streets.....	910	1/2	1,200
Third avenue.....	Bowery and Forty-fourth street (exc. tracks).....	44,000	1/2	56,250
Second avenue.....	Houston and Thirty-fourth streets (exc. tracks).....	36,000	1/2	45,000
Seventh street.....	Avenue C and D.....	2,108	1/2	2,750
Eighteenth street.....	Union square and First avenue.....	7,400	1/2	9,000
Thirty-ninth street.....	Seventh and Eighth avenues.....	2,500	1/2	3,200
Frankfort street.....	Chatham and Pearl streets.....	2,350	1/2	3,000
Twenty-ninth street.....	Fifth and Madison avenues.....	1,397	1/2	1,800
Thirtieth street.....	Second and Third avenues.....	1,951	1/2	2,400
Nineteenth street.....	First avenue and Broadway.....	9,600	1/2	11,750
Forty-second street.....	Eighth avenue and Hudson River.....	22,100	1/2	27,700
Eighth avenue.....	Forty-second and Fifty-ninth streets.....	27,602	1/2	35,000
Forty-fifth street.....	Sixth and Ninth avenues.....	7,954	1/2	9,750
William street.....	Pearl street and Old Slip.....	7,500	1/2	9,150
Thirty-first street.....	Eighth and Ninth avenues.....	2,518	1/2	3,200
Cedar street.....	Pearl and North River.....	5,865	1/2	6,750
West street.....	Hammond and Hoboken (exc. tracks).....	13,060	1/2	16,250
Carried forward.....				\$705,000

STREET.	BETWEEN	ESTIMATED NUM- BER OF SQUARE YARDS.	PROPORTION OF COST TO BE BORNE BY CITY.	
			Ratio.	Amount.
	Brought forward.			\$705,000
Morris street.....	Broadway and West street.....	1,057	$\frac{1}{2}$	1,300
Rector street.....	do. do. do.	1,800	$\frac{1}{2}$	1,750
Liberty street.....	Maiden Lane from Liberty to East River.....	10,078	$\frac{1}{2}$	13,000
Twelfth street.....	Fifth and Sixth avenues.....	8,100	$\frac{1}{2}$	8,850
Eleventh street.....	Sixth and Seventh avenues.....	2,500	$\frac{1}{2}$	3,200
Thirtieth street.....	First and Second avenues.....	2,000	$\frac{1}{2}$	2,500
Thirty-eighth street...	Second avenue and East River.....	2,600	$\frac{1}{2}$	3,300
Watts street.....	Greenwich and West street.	1,500	$\frac{1}{2}$	1,850
Thirty-eighth street...	Third and Fourth avenues.....	2,900	$\frac{1}{2}$	3,650
Forty-sixth street.....	Sixth and Seventh avenues.....	2,500	$\frac{1}{2}$	3,200
Thirty-eighth street.....	Second and Third avenues.....	2,000	$\frac{1}{2}$	2,500
West street.....	Hoboken, (Watts) and Vestry streets (the block from Hoboken to Watts street has been paved at private ex- pense).....	2,000	$\frac{1}{2}$	2,500
Forty-ninth street.....	Sixth and Eighth avenues.....	5,000	$\frac{1}{2}$	6,400
Fifty-second street.....	Seventh and Eighth avenue.....	2,500	$\frac{1}{2}$	3,200
Barclay street.....	College place and West street.....	2,000	$\frac{1}{2}$	2,500
Fifth street.....	Second avenue and Bowery.....	2,100	$\frac{1}{2}$	2,525
Bleecker street.....	Broadway and Bowery.....	3,000	$\frac{1}{2}$	3,750
Third street.....	Avenues A and C.....	4,000	$\frac{1}{2}$	5,000
Ninth avenue.....	Fortieth and Forty-fifth streets.....	8,500	$\frac{1}{2}$	11,000
	Total estimated cost to city at large.			\$781,975

The Ordinances for the following TRAP-BLOCK PAVEMENTS provide for an assessment of the whole of their cost upon the property benefited.

* Fifty-second street, between Sixth and Seventh avenues. Broadway, between Fifty-ninth and Seventieth streets.

† Forty-seventh street, between Eleventh avenue and Hudson River.

Seventy-ninth street, between Fifth avenue and East River.

‡ Fifty-fifth street, between Third and Fourth avenues.

‡ Sixty-fifth street, between Eighth and Tenth avenues.

§ Forty-ninth street, between Seventh and Eighth avenues.

Fifty-sixth street, between Third and Sixth avenues.

Forty-fifth street, between Ninth and Tenth avenues.

Fifty-ninth street, between Second and Third avenues.

Fifty-ninth street, between Eighth and Tenth avenues.

Fourth avenue, between Thirty-eighth and Forty-third streets.

Seventy-first street, between Third and Fourth avenues.

Forty-sixth street, between Lexington and Fourth avenues.

Fifty-seventh street, between Fifth and Ninth avenues.

Twenty-first street, between Third and Fourth avenues and the street.

West side Gramercy park, from Twentieth to Twenty-first street.

Third avenue, between One Hundred and Ninth and One Hundred and Twenty-ninth streets.

* Sewer ordered.

† Sewer in progress.

‡ Not curbed and guttered.

§ Repealed by subsequent ordinance, which directs the new pavement to be laid from Sixth to Eighth avenue, at one-half city expense.

Fifty-fifth street, between Broadway and Eighth avenue.
 Forty-eighth street, between Fifth and Sixth avenues.
 Forty-fifth street, between Ninth and Tenth avenues.
 Twentieth street, between Third and Fourth avenues.

The following Ordinances authorized the construction of new cobble stone pavements :

* Thirty-fourth street, between Tenth and Eleventh avenues.

† Nineteenth street, between Tenth and Twelfth avenues.
 Hammond street, between West street and Thirteenth avenue.

Sixteenth street, between avenue B and East River.

Thirty-seventh street, between Lexington and Third avenues.

Avenue C, between Sixteenth and Seventeenth streets.

‡ Eleventh avenue, between Fourteenth and Twenty-third streets.

Forty-sixth street, between Eleventh and Twelfth avenues.

* New grade ordered but not worked.

† Street not curbed and guttered.

‡ Regulating and grading now in progress.

SCHEDULE NO. 29.

CONSTRUCTION OF SEWERS.

Contracts have been made since January 1, 1864, for the construction of new sewers in the following localities, viz.:

STREET.	BETWEEN.	CONTRACTOR.	LENGTH.	SIZE.	NO. OF BASINS.	PRICE PER LINEAL FOOT.
Seventieth street....	Hudson River and about 300 feet east	P. F. Maginn.....	3080	8 feet cir.....	9	\$8.85
Seventieth street....	300 ft E. Hudson River & Eleventh ave			4 feet by 2 feet 8 in.		
Seventieth street....	Eleventh and Tenth avenues.....			5 feet by 4 feet.....		
Tenth avenue.....	Seventieth and Seventy-fifth streets.			"		
First avenue.....	Fifty-eighth and Sixtieth streets.....	Jas. P. Dunn.....	1109	4 feet by 2 feet 8 in..	2	5 80
Fifty-ninth street..	First and Second avenues.....			"		
Eighth avenue.....	Thirteenth and Fourteenth streets..			"		
Suffolk street.....	Delancey and Broome streets.....			"		
Oliver street.....	Madison street and Chatham square..	P. J. Rowe.....	332	"	1	6 18
Fifty-second street..	Seventh ave. and west side Broadway	P. J. Rowe.....	337	"	1	5 45
Minnetta street.....	Bleecker str. & 40 ft. So. Minetta lane	W. A. Cumming	228	"	1	5 60
Sixth avenue.....	Fifty-ninth street and 500 feet south.	J. Duffy, Jr.....	335	"	1	6 80
Sixth avenue.....	500 feet south Fifty-ninth and 54th st	T. McManus	2150	4 ft. 6 in. by 2 ft. 8 in.	9	7 00
Fifty-fourth street..	Sixth and Seventh avenues.....	J. Duffy, Jr.....	220	"		6 45
Montgomery street..	Madison and Henry streets.....	J. Duffy, Jr.....	599	"		5 40
Monroe street.....	Market and Pike streets.....	J. Duffy, Jr.....		"		
Third avenue.....	118th and 129th streets.....	P. McCafferty.....	3515	"	16	5 40
One Hundred and Twenty-third st....	Second and Third avenues.....					

One Hundred and Twenty-ninth st.	Fifth and Sixth avenues.....	Jas Moore.....	957	4 ft. by 2 ft. 8 in.....	2	\$5 00
Orchard street.....	Houston and Stanton streets.....	O. Farley.....	463	".....		5 25
Fiftieth street.....	Fourth and Lexington avenues.....	Wm. Baird.....	420	".....	1	6 80
Seventh avenue.....	Thirtieth and Thirty-first streets.....	Law. Rock.....	206	".....		6 75
Tenth avenue.....	Thirtieth and Thirty-first streets.....	P. Carrigan.....	360	".....		7 00
Fifth avenue.....	Seventy-ninth and Eighty-ninth street.....	M. Treacy.....	2,410	".....	11	6 00
Morton street.....	Washington and Hudson streets.....	J. Duffy, Jr.....	517	".....	2	5 00
Clinton street.....	Delancey and Rivington streets.....	J. Cunningham.....	449	One foot cir.....		8 50
Grand street.....	Greene and Mercer streets.....	J. Duffy, Jr.....	183	".....		3 50
Eight avenue.....	Sixteenth and Seventeenth streets.....	J. Cunningham.....	200	".....		3 50
Eighty-second street.....	Third and Fourth avenues.....	M. Treacy.....	970	4 ft. by 2 ft. 8 in.....	1	6 00
Tenth avenue.....	Thirty-fourth and Thirty-fifth streets.....	L. Rock.....	253	".....		7 00
Third avenue.....	108th and 110th streets.....	J. Cunningham.....	557	".....	4	5 00
Thirty-eighth street.....	Eighth and Ninth avenues.....	L. Rock.....	500	".....		6 00
Hudson street.....	Beach and Hubert streets.....	".....	195	One foot cir.....		3 80
Third avenue.....	Ninth and Tenth streets, east side.....	J. Cunningham.....	189	".....		3 00
First avenue.....	Fiftieth and Fifty-second street.....	} P. Carrigan			8	6 00
Fifty-first street.....	First avenue and 475 feet east.....		1,100	4 ft. by 2 ft. 8 in.....		
RECEIVING-BASINS.						
	Southwest cor. Grand and Chrystie sts.....	Jas. Everard.....			1	
	Southeast cor. Allen and Houston sts.....	".....			1	
	S. W. cor. Forty-third and Broadway.....	".....			.1	

The following Sewers were built at private expense :

STREET.	BETWEEN.	CONTRACTOR.	LENGTH IN FEET.	SIZE.
Sixtieth street.	Lexington and Third ave..	T. Crimmins.	875	1 foot cir....
Madison avenue	44th and 42d streets.....	" ..	878	4 ft by 2 ft 8 in
Forty-third str.	Fifth and Madison avenue.	" ..	40	" ..
Lexington ave.	88th and 89th streets.....	" ..	83	" ..
Third avenue..	extension to Harlem River	" ..		

And the following Receiving-basins at private expense :

Southeast corner of West and Watts streets, M. Murray.....	1
Northeast corner of West and Watts streets, M. Murray.....	1

RECAPITULATION.

Sewers built by contract.....	22,166 lineal feet.
" at private expense.....	1,876 "
Total length.....	23,542 lineal feet.
or 4 miles 2,422 lineal feet.	
Receiving-basins and Culverts.....	64

SCHEDULE No. 30.

SEWERS.

Constructed under the direction of the Croton Aqueduct Department, since its organization in 1849.

1849.	Number of contracts.....	25
	Lineal feet of sewerage.....	16,155
	Number of basins and culverts.....	53
1850.	Number of contracts.....	70
	Lineal feet of sewerage.....	61,579
	Number of basins and culverts.....	173
1851.	Number of contracts.....	105
	Lineal feet of sewerage.....	63,009
	Number of basins and culverts.....	157
1852.	Number of contracts.....	100
	Lineal feet of sewerage.....	65,689
	Number of basins and culverts.....	196
1853.	Number of contracts.....	85
	Lineal feet of sewerage.....	73,542
	Number of basins and culverts.....	236
1854.	Number of contracts.....	88
	Lineal feet of sewerage.....	73,519
	Number of basins and culverts.....	244
1855.	Number of contracts.....	65
	Lineal feet of sewerage.....	33,679
	Number of basins and culverts.....	110
1856.	Number of contracts.....	73
	Lineal feet of sewerage.....	49,280
	Number of basins and culverts.....	21
1857.	Number of contracts.....	23
	Lineal feet of sewerage.....	10,430
	Number of basins and culverts.....	13

1858.	Number of contracts.....	56	
	Lineal feet of sewerage.....		36,253
	Number of basins and culverts.....	98	
1859.	Number of contracts.....	64	
	Lineal feet of sewerage.....		41,867
	Number of basins and culverts.....	90	
1860.	Number of contracts.....	50	
	Lineal feet of sewerage.....		37,188
	Number of basins and culverts.....	73	
1861.	Number of contracts.....	44	
	Lineal feet of sewerage.....		29,303
	Number of basins and culverts.....	69	
1862.	Number of contracts.....	29	
	Lineal feet of sewerage.....		19,653
	Number of basins and culverts.....	89	
1863.	Number of contracts.....	31	
	Lineal feet of sewerage.....		20,916
	Number of basins and culverts.....	54	
1864.	Number of contracts.....		
	Lineal feet of sewerage.....		23,542
	Number of basins and culverts.....	64	

	MILES.	FEET.
Total length of sewers constructed by Croton Department.....	124	4,849
Estimated length of those previously con- structed.....	55	912
	<hr/>	<hr/>
Making the total sewerage.....	180	481
	<hr/>	<hr/>

SCHEDULE No. 31.

OF ORDINANCES FOR THE CONSTRUCTION OF SEWERS, UNDER
WHICH CONTRACTS HAVE NOT BEEN MADE.

*Grand street, from No. 445 to Sheriff street.

*Ridge street, from Delancey to Rivington street.

First avenue, from Fifty-fourth to Fifty-fifth street.

† Seventy-first street, from Fourth avenue to East River.

Fifty-sixth street, from Second to near First avenue.

Eightieth street, from Second avenue to 70 feet east of
Third avenue.

Cornelia street, from Fourth avenue to Bleecker street.

Seventieth street, from Third to Fourth avenue.

Eighty-first street, from Second to Third avenue.

One Hundred and Tenth street, from Second to Eighth
avenue.

Fifty-second street, from Sixth to Seventh avenue.

Forty-ninth street, from Eighth to Ninth avenue.

Seventy-fourth street, from Fifth avenue to East River.

Fifty-sixth street, from Tenth avenue to Hudson River.

Fifty-fifth street, from Fourth avenue through Fifth avenue
to near Fifty-fourth street.

Forty-sixth street, from Eleventh avenue to 75 feet west
of Tenth avenue.

Lexington avenue, from Fifty-ninth to Sixty-sixth street.

Forty-fifth street, from Sixth avenue to present sewer.

Eleventh avenue, from Forty-seventh to Forty-eighth
street.

* Construction indefinitely deferred by resolution of Common Council.

† This street is not opened, in law, from Third avenue to East River ; the
block from Third to Fourth avenue is now sewered.

Fiftieth street, from Broadway to sewer between Broadway and Eighth avenue.

Forty-third street, from Lexington to Fourth avenue.

Sixtieth street, from Broadway to Ninth avenue.

Eighty-second street, from 225 feet west of First avenue, through First avenue to Seventy-ninth street.

Gansevoort street, from present terminus to Hudson River.

Fourth avenue, from Seventy-first to Fifty-ninth street, west side.

Seventy-eighth street, from Third to Fourth avenue.

Thirty-ninth street, from Second avenue to crown between First and Second avenues.

Fifty-seventh street, from First avenue to present sewer.

Monroe street, from Jackson to Scammel street.

Oak street, from Oliver to James street.

One Hundred and Twenty-fifth street, from Sixth avenue to and through Manhattan street to Tenth avenue.

Orchard street, from Delancey to Rivington street.

West street, from Horatio to Gansevoort street.

Second avenue, from One Hundred and Twenty-third to One Hundred and Twenty-fifth street.

Eighty-third street, from Third to Fourth avenue.

Seventy-eighth street, from Second to Third avenue.

Bleecker street, from Perry to Hammond street.

Madison street, from Scammel to Jackson street.

SCHEDULE No. 32.

MISCELLANEOUS CONTRACTS.

Iron railing, for new Grand Reservoir; contractor, McKuhn.

Roof of gate-house, Grand Reservoir; contractor, W G. Worthen.

Syenite for terraces to gate-house, Grand Reservoir ; contractor, S. C. Sargent.

Blue stone flagging, Grand Reservoir ; contractor, A. Biglow.

Pedestals for terrace, Grand Reservoir ; contractor, F. Cobb.

Terraces for Grand Reservoir ; contractors, Blackledge & Banta.

For 2,100 feet 16-inch water-pipe.

" 6,000 " 12-inch "

" 18,000 " 6-inch "

" 2,250 " 4-inch "

14 branches.

Contractors, Warren Foundry & Machine Company.

For the cleansing of all Receiving-basins and Culverts, throughout the city ; contractors, Holland & Foster.

For the general repairs to the pavements of all carriage-ways throughout the city ; contractor, John L. Brown.

SCHEDULE No. 33.

The following disused Wells were either protected by a substantial stone covering or filled to the street surface in the year 1864.

*Broome, corner Sheriff street.

Broome, north-west corner Mulberry street.

* Henry street, opposite No. 83.

Henry street, thirty feet south of Scammel street.

* Stanton, north-west corner Lewis street.

- * Allen, south-east corner Grand street.
- Eldridge, north-west corner Grand street.
- East Broadway, opposite No. 158.
- Henry street, opposite No. 129.
- Eldridge street, north-west corner Stanton street.
- Varick street, north-west corner Broome street.
- Leonard street, opposite No. 47.
- Grand street, north-west corner Suffolk street.
- Pitt street, fifty feet south of south-west corner Stanton street.
- Prince street, north-west corner Mulberry street.
- * Varick street, south-west corner Watts street.
- Prince street, corner Elizabeth street. (Pump standing.)
- Montgomery street, corner East Broadway. “
- * Franklin street, corner Courtlandt alley.
- Cornelia street, opposite No. 14.
- * Grand street, north-west corner Mercer street,
- Ninth street, corner Stuyvesant street.
- Canal street, north side, one hundred feet east of Hudson street.
- East Broadway, south-east corner Jefferson street.
- Bleecker street, north-west corner Commerce street.
- * Madison avenue, corner Fifty-third street.
- Vestry street, north-west corner Hudson street.
- * Ann, north-west corner Nassau street.

NOTE.—Wells marked thus (*) were filled to surface of street.



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